Maintaining Your Agilent LC and LC/MS Systems

Our measure is your success.

Agilent Technologies

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Welcome to the next generation of HPLC

The new Agilent 1200 Series is designed for ultimate robustness, reliability, and performance.

No matter what your application may be, the bottom line is results. And the new Agilent 1200 Series platform helps you achieve the best results with features such as:

- Intuitive user interfaces that let you control and monitor instrument status.
- Newer, and more efficient, data analysis and review tools.
- Enhanced diagnostic software that detects small problems before they lead to costly downtime.

In addition, Agilent's 1200 Series LC platform helps you achieve all the performance, all the time with a flexible, modular design that allows you to configure the system to meet your unique application requirements.

And this maintenance guide will help you keep your Agilent 1200 Series running at optimal performance and peak efficiency. Inside this guide you'll find:

- Essential facts about Agilent supplies and accessories.
- Vital maintenance procedures and troubleshooting tips.
- All the Agilent part numbers you need in one easy-to-use guide.

Agilent ZORBAX Rapid Resolution High Throughput (RRHT) columns

Boost your productivity without sacrificing performance, reliability or convenience.

Chances are, you are under increased pressure to generate conclusive data under demanding deadlines. That is why Agilent's ZORBAX RRHT line now includes columns that can be used at pressures of 600 bar for faster, higher-resolution separations.

Together with the Agilent 1200 Series Rapid Resolution System, ZORBAX RRHT 1.8 µm HPLC columns can help you...

- Reduce analysis time by up to 95%.
- Process samples up to 20 times faster.
- Increase resolution by 30-40% over conventional HPLC.
- Develop HPLC methods more quickly.
- Analyze complex separations on shorter columns, and with less solvent.
- Confidently move methods from your lab to any lab in the world.
- Perform conventional, fast, and ultra-fast separations on the same unit.
- Securely transfer conventional methods and re-evaluate current methods on fast LC without changing separation conditions.

To learn more about Agilent's 1200 Series LC system, or our Rapid Resolution High Throughput columns, consult your Agilent LC Column Selection Guide (publication number 5989-5992). Or visit **www.agilent.com/chem/1200RR**

Manual Injection Valve Maintenance

Engineered for consistent results and optimal system performance.

Agilent's industry-leading Manual Injection Valves are designed to ensure trouble-free operation with your 1100 or 1200 Series HPLC System.

Our valves also feature patented "Make-Before-Break" architecture that allows you to switch between LOAD and INJECT positions without interrupting the flow. So you can analyze more samples in less time.

In this section, you will find the latest in LC injection valve technology, along with important maintenance information that will maximize reproducibility.

Agilent Injection Valves from Rheodyne

- Patented Make-Before-Break (MBB) technology that provides uninterrupted flow when switching between LOAD and INJECT positions. Additionally, MBB greatly reduces transient pressure shocks, which benefits flow-sensitive detectors and extends column life.
- Dual-mode (or front-loading) injection, which enables either the partial-filling or the complete-filling of the sample loop.
- An injection port built right into the handle. This unique design allows the tip of the needle to connect directly to the sample loop. So you don't have to worry about sample loss during loading.

The reproducibility of manual sample injectors depends on operator skill, syringe precision, and loading method. The partial-filling method is typically reproducible to 1.0% relative standard deviation (RSD). The complete-filling method is reproducible to 0.1% RSD for 5 µL loops.

7725i manual injection valve

Series 7725i and 9725i Analytical Injection Valves

Stainless steel (SS) 7725i and PEEK 9725i valves are the most popular injection valves for analytical HPLC. Features include:

- A 20 µL loop (installed). Loops are also available in stainless steel or PEEK from 5 µL to 5 mL (10 mL for PEEK).
- Make-Before-Break (MBB) technology allows switching without flow interruption.
- Wide 30° port angles offer easier access to fittings.
- Built-in position sensing switch provides the chromatograph with a reproducible start signal.

Series 3725i-038 and 3725i Preparative Injection Valves

The series 3725i-038 (stainless steel) and 3725i (PEEK) are the most suitable manual valves for large sample volumes, high flow rates, and preparative columns sized 1.0-10 cm in diameter.

- Versatile ports accommodate 1/8 in. (3.2 mm) and 1/16 in. (1.6 mm) OD tubing. Note: 1/16 in. OD tubing requires an adapter, PN 5067-1503.
- 1.0 mm diameter passages allow flow rates up to 800 mL/min with virtually no pressure drop.
- Make-Before-Break technology allows switching without flow interruption.
- High reproducibility for both partial-filling and complete-filling methods.
- Sample range is 100 µL to 20 mL (10 mL loop is installed).
- Flow range is 10 to 800 mL/min.
- Built-in position sensing switch gives the chromatograph a reproducible start signal.

Manual Injection Valves with Position Sensing Switches

Description	Part No.
7725i, stainless steel	5063-6502
9725i, PEEK	0101-1253
3725i, stainless steel prep valve	0101-1232
3725i, PEEK prep valve	0101-1231
Manual prep injection valve kit, stainless steel With position sensing, 10 mL loop, 25 mL syringe, ring mounting bracket, start cable, SS connecting capillaries, 0.5 mm ID, 40 cm and 60 cm	5065-9922
PEEK adapter, 1/8 in. to 1/16 in., 4/pk	5067-1503

Injection Valve Replacement Parts

Description	Part No.
Rotor Seals	
Vespel: operating pH 0 to 10 (7125)	0101-0623
Tefzel: operating pH 0 to 14 (7125)	0101-0620
PEEK: operating pH 0 to 14 (7125, 7725, 9725)	0101-1255
Rhebuild kit for 7725 Series	0101-1254
PEEK: operating pH 0 to 14 (3725)	0101-1233
Rotor seal, PEEK, for 7010/7000/7040	0101-1256
Stator Face Assembly	
Rheodyne Series 7125	0101-0624
Rheodyne Series 7725	0100-1859
Stators	
Rheodyne Series 7725	0100-1860
Accessories	
Isolation Seal, Rheodyne Series 7725, 9725, 3725	1535-4046
Rheotool socket wrench, 1/4 in.	8710-2391
Hex key, 9/64 in., 15 cm long, T-handle	8710-2394
Ring stand mounting bracket	1400-3166
PEEK adapter, 1/8 in. to 1/16 in., 4/pk	5067-1503
Position sensor switch for manual valves	0490-1849

Stators and Seals

1400-3166

Tips & Tools

Peak doubling can be a sign that it is time to replace the injector rotor seal.

Stainless steel sample loops

Stainless Steel Sample Loops

Remember, size designations for loops are nominal. The actual volumes can differ from their theoretical designations because of the ±0.025 mm (0.001 in.) tolerance of the metal tubing bore.

Generally, accuracy rates are about ±5% for large metal loops (1.0 mm, 0.040 in.), ±10% for intermediate loops (0.5 mm, 0.020 in.), and ±30% for small loops (0.2 mm, 0.007 in.). However, since both standards and unknowns are typically analyzed using the same sample loop, knowledge of the actual volume is rarely needed. If you do need to know the sample volume, it is best to calibrate the loop while it is on the valve, so the valve's flow passage is also taken into account.

Sample Loops

Stainless steel loop ends are square cut and burr-free for a flush connection to the valve. They are also supplied with unswaged fittings. Flexible PEEK loop ends feature a clean, straight cut for low dead-volume connection. Both types of sample loops are factory-cut and finished to the highest quality.

Stainless Steel Loops for 7125 and 7010 Injectors

Description	ID (mm)	Part No.
5 µL	0.18	1535-4860
10 µL	0.30	0101-0376
20 µL	0.51	0101-0377
50 µL	0.51	0101-0378
100 µL	0.51	0101-0379
200 µL	0.76	0101-1252
500 µL	0.76	0101-1251
1 mL	0.76	0101-1219
2 mL	1.00	0101-1250
5 mL	1.00	0101-1249

Stainless Steel Loops for 7725 Injectors

Description	ID (mm)	Part No.
5 µL	0.18	0101-1248
10 µL	0.30	0100-1923
20 µL	0.30	0100-1922
50 µL	0.51	0100-1924
200 µL	0.76	0101-1247
500 µL	0.76	0101-1246
1 mL	0.76	0101-1245
2 mL	1.00	0101-1244
5 mL	1.00	0101-1243

Tips & Tools

Sample loops for the 7725 Series and 7125 Series are not interchangeable. That's because the port angle is 30° for the 7725, and 20° for the 7125.

PEEK Sample Loops

PEEK is inert to almost all organic solvents and is biocompatible. Like metal loops, the actual volumes of PEEK loops can differ from their nominal designations because of the ±0.05 mm (0.002 in.) tolerance of the tubing bore. Generally, accuracy rates are about ±14% for large PEEK loops (0.8 mm, 0.030 in.), ±21% for intermediate loops (0.5 mm, 0.020 in.), and ±65% for small loops (0.2 mm, 0.007 in.).

Although PEEK is compatible with virtually all solvents, many factors can affect the burst pressure of PEEK tubing. For example, wall thickness, temperature, exposure time and concentration of organic solvents can all impact durability. Additionally, solvents such as THF, methylene chloride and DMSO cause PEEK to swell – while concentrated nitric acid and sulfuric acid can weaken PEEK tubing.

PEEK sample loops

PEEK Sample Loops for 9725 Injectors

Description	ID (mm)	Part No.
5 µL	0.18	0101-1241
10 µL	0.25	0101-1240
20 µL	0.25	0101-1239
50 µL	0.51	0101-1238
100 µL	0.51	0101-1242
200 µL	0.51	0101-1237
500 µL	0.76	0101-1236
1 mL	0.76	0101-1235
2 mL	0.76	0101-1234
5 mL	0.76	0101-1230

PEEK Sample Loops for 3725 Injectors

Description	ID (mm)	Part No.
2 mL	1.6	0101-1229
5 mL	1.6	0101-1228
10 mL	2.0	0101-1227
20 mL	2.0	0101-1226

Syringes for Manual Injection Valves

The syringes for manual injection have a blunt-tip point style needle to prevent damaging the valve's internal parts. They can be used with any type/brand of manual injection valve.

Syringes for manual injection valves

Syringes for Manual Injection Valves

Volume (µL)	Description	Needle	Part No.
10	Removable	22/51/3	5182-9725
10	Fixed	22/51/3	5182-9644
25	Removable	22/51/3	5182-9719
25	Fixed	22/51/3	5182-9628
50	Removable	22/51/3	5183-4538
50	Fixed	22/51/3	5182-9619
100	Removable	22/51/3	5183-4539
100	Fixed	22/51/3	5182-9613
250	Removable	22/51/3	5182-9720
250	Fixed	22/51/3	5182-9624
500	Removable	22/51/3	5183-4540
500	Fixed	22/51/3	5182-9658

A set of valve types specially designed for the Agilent 1100/1200 Series HPLC system allows you to extend your HPLC applications. New valve offerings give you:

- More flexibility in solvent selection and column selection.
- New automation capabilities in sample preparation.
- Increased sample throughput through alternating column regeneration.
- Increased separation performance with multidimensional chromatography.

Switching Valve Supplies

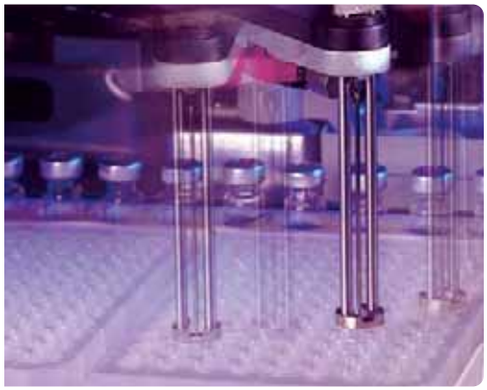
Capillary Tubing Kits

Application	Valve Kit	Part No.
Column regeneration Capillaries: 0.17 mm ID	G1157A	G1156-68711
Column regeneration Capillaries: 0.25 mm ID	G1157A	G1156-68713
Column regeneration Capillaries: 0.17 mm ID	G1316A #057	G1316-68711
Column selection Capillaries: 0.17 mm ID	G1159A	G1156-68712
Sample enrichment Capillaries: 0.17 mm ID	G1316A #055	G1316-68710
Sample enrichment Capillaries: 0.17 mm ID	G1158A	G1156-68714
Solvent selection Flow rate up to 10 mL/min	G1160A	G1160-68706

Switching valve

Switching Valve Replacement Parts

Use With	Description	RheBuild Kit Part No.	Rotor Seal Part No.	Stator Part No.
G1160A	12 Position/13 Port Preparative Solvent Selection Valve	0101-1288		0101-1365
G1159A	6 Position/14 Port Column Selection Valve (Six Column Selector)	0101-1290		0101-1364
G1157A	2 Position/10 Port Valve Dual-sided MBB	0101-1359		0101-1362 Stator head
G1158A	2 Position/6 Port Switching Valve	0101-1358 (PEEK)	0100-1855 (Vespel) 0100-1854 (Tefzel) 0100-2233 (PEEK)	0100-1850 Stator head
G1158B	2 Position/6 Port, 600 bar Switching Valve		0101-1409 (HP PEEK blend)	0101-1417
G1162A	2 Position/6 Port Micro Switching Valve		0100-2087	0100-2089
G1163A	2 Position/10 Port Micro Switching Valve		0101-1361	0101-1363



Autosampler Maintenance

Ensuring peak performance, productivity, and peace-of-mind.

Your Agilent autosampler is designed to deliver accurate measurements, precise injection volumes, and high-quality data. And by following a regular schedule of preventive maintenance, you can ensure a lifetime of defensible results.

This section will give you step-by-step instructions on how to perform crucial procedures such as:

- Replacing the rotor seal
- Checking the stator
- Replacing the needle and needle seat
- Checking the finger caps
- Replacing the metering unit seal
- Cleaning the piston
- Cleaning the solvent waste path
- Checking the leak sensor
- Performing a pressure test

You will also find the top-quality Agilent supplies you need to keep your autosampler running at top efficiency.

Injection Valve Maintenance

Replacing the Rotor Seal

For Standard and Well Plate Autosamplers G1313A, G1327A, G1367A

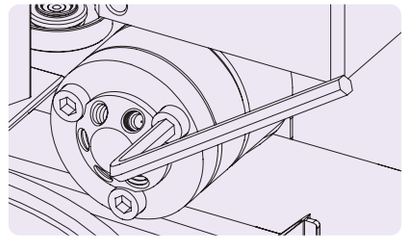
Rotor seal replacement is the most common injection valve maintenance procedure. Indications include rotor seal blockages and cross-port leaks. You should suspect a cross-port leak if you notice a drop of mobile phase coming out of the needle when it rises to draw sample from a vial. Or, if you experience poor injection volume precision. Cross-port leaks can also be found by performing a pressure test.

Tools

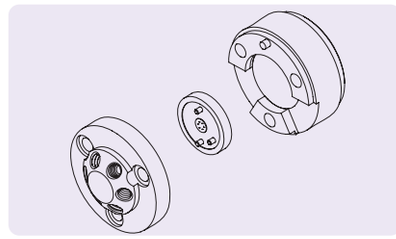
9/64" Allen wrench (to remove the stator face and disassemble the valve)

Metric hexagonal keys (for the rest of the Autosampler screws)

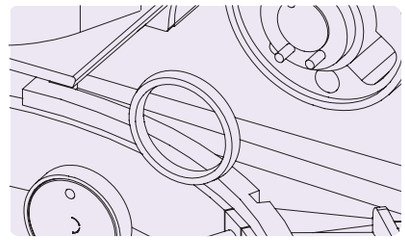
1/4" Wrench (to remove the capillaries)



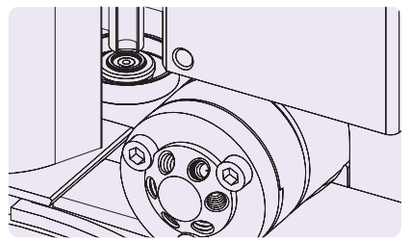
1. Remove the capillaries from the stator face. Remove the stator screws with a 9/64" Allen wrench.



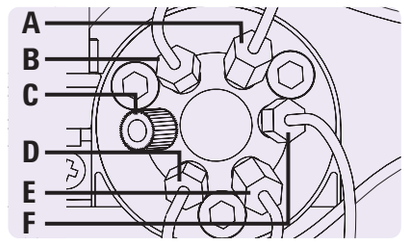
2. Remove the stator head, stator face and stator ring.



3. Remove and replace the rotor seal (and the isolation seal, if necessary).



4. Install the stator head, then the stator face. Replace the stator screws, tightening them evenly and carefully.



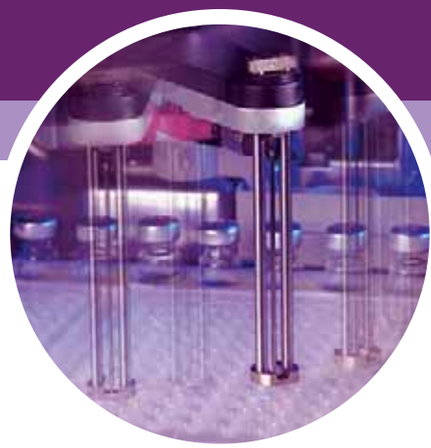
5. Connect all capillaries according to the diagram.

A - Pump	D - Waste
B - Metering device	E - Needle seat
C - Plug	F - Column

Injection Valve Maintenance

Use With	Description	Part No.	RheBuild Kit Part No.	Rotor Seal Part No.	Stator Part No.
G1313A, G1329A, G1367A	2 Position/6 Port Injection Valve	0101-0921	0101-1257	0100-1853 (Vespel) 0100-1849 (Tefzel) 0100-2231 (PEEK)	0100-1850 Stator head 0100-1851 Stator face
G1367C	2 Position/6 Port Injection Valve, 600 bar	0101-1422		0101-1416	0101-1417
G1377A	2 Position/6 Port Micro Injection Valve	0101-1050	0101-1257	0100-2088 (Vespel)	0100-2089
G2258A	10 Port, Dual Loop Valve	0101-1385		0100-2415	0101-1390
G2260A	2 Position/6 Port MBB Injection Valve	0101-1267	0101-1268		

Stator face, ceramic



1100/1200 Needles and Needle Seats

Exchanging the Needle

Before beginning this procedure:

- Select "Change Needle" under "Maintenance Function."
- Remove the front cover when the needle is positioned approximately 15 mm over the needle seat.

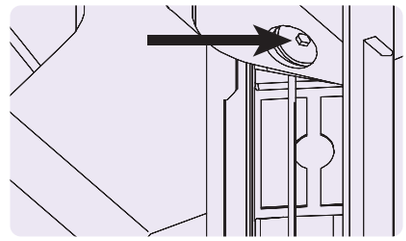
The needle should be replaced when it becomes bent, burred or blunt. The needle seat should be replaced when it is leaking or plugged. You should suspect a leak if you notice a trail of buffer crystals on the needle seat. The needle seat can become blocked if the sample contains particulates, as this is the first restriction that the sample experiences. If this occurs, try backflushing the needle seat capillary.

Tools

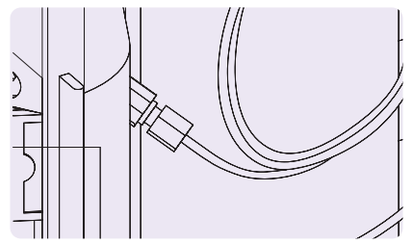
1/4" Wrench

2.5 mm Hexagonal key

When installing the new needle, take care not to strip the setscrew. You may have to bend the needle slightly to ensure needle seat alignment.

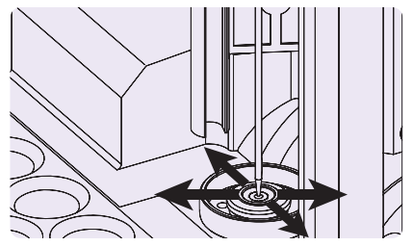


1. Select "Needle Down" button until the needle screw shows up in the hole of the safety cover.



2. Remove the sample loop.

   Loosen and remove the needle's set screw.

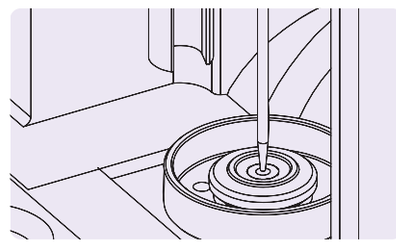


3. Move the needle arm to the lowest point using the "Needle Down" function.

   Install the new needle.

   Align the needle above the needle seat.

   Reconnect the sample loop.



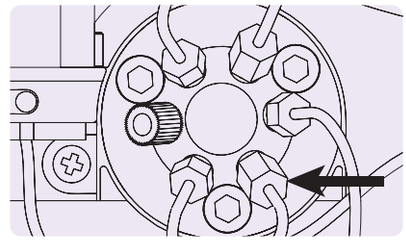
4. Situate the needle approximately 2 mm above the seat using the "Needle Up" function. Ensure the needle is aligned with the seat.

Exchanging the Needle Seat

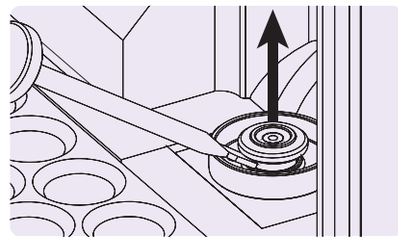
(See manual for Well Plate Autosampler)

Before beginning this procedure:

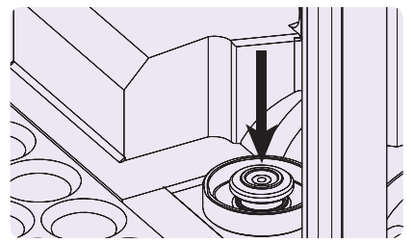
- Select "Change Needle" under "Maintenance Function."
- Remove the front cover when the needle is positioned approximately 15 mm over the needle seat.



1. Disconnect the seat capillary from the injection valve (port 5).



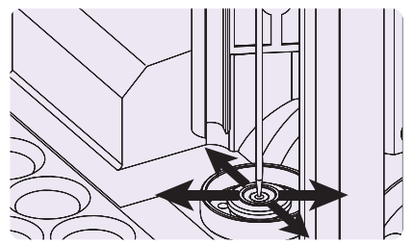
2. Use a small, flat screwdriver to ease out the needle seat.



3. Insert the new needle-seat assembly.

   Press the seat firmly into position.

   Connect the seat-capillary fitting to port 5 of the injection valve.



4. Use the "Needle Down" button to position the needle above the seat, making sure the needle and seat are properly aligned.

   Install the front cover and select "END" under "Maintenance Function."

G2260-87201

1100/1200 Needles and Needle Seats

Agilent Autosampler	Needle Assembly Description	Part No.	Compatible with Needle Seat	Part No.
G1313A, G1327A, G1329A	Needle assembly, standard autosampler	G1313-87201	Standard needle seat 0.17 mm ID capillary, 2.3 µL	G1313-87101
			Standard needle seat 0.12 mm ID capillary, 1.2 µL	G1313-87103
G1313A, G1327A, G1329A	Needle assembly, for use with PEEK seat	G1313-87203	Standard needle seat, PEEK 0.17 mm ID capillary, 2.3 µL	G1313-87102
G1313A, G1327A, G1329A	Needle assembly, 900 µL upgrade	G1313-87202	Standard needle seat 0.17 mm ID capillary, 2.3 µL	G1313-87101
G1387A, G1389A	Needle assembly, micro LC autosampler	G1329-80001	Micro LC Needle seat 100 µm ID capillary, 1.2 µL	G1329-87101
			Micro LC Needle seat 50 µm ID capillary, 0.3 µL	G1329-87103
G1367A	Needle assembly, well plate autosampler (green)	G1367-87200	Needle seat, well plate autosampler 0.17 mm ID capillary, 2.3 µL	G1367-87101
	Needle assembly, well plate autosampler (new, blue)	G1367-87201	Needle seat, well plate autosampler 0.12 mm ID capillary, 1.2 µL	G1367-87102
G1377A	Needle assembly, micro well plate sampler	G1377-87201	Needle seat, micro well plate autosampler (without seat capillary)	G1377-87101
			Seat Capillary, 100 µm Fused silica/PEEK with fittings	G1375-87317
			Seat Capillary, 75 µm Fused silica/PEEK with fittings	G1375-87316
			Seat Capillary, 50 µm	G1375-87300
G2258A	Needle assembly, dual loop autosampler	G2258-68710	Twin needle seat, dual loop autosampler	G2258-87102
G2260A	Needle assembly, prep autosampler	G2260-87201	Needle seat, prep autosampler 0.5 mm ID, 20 µL	G2260-87101

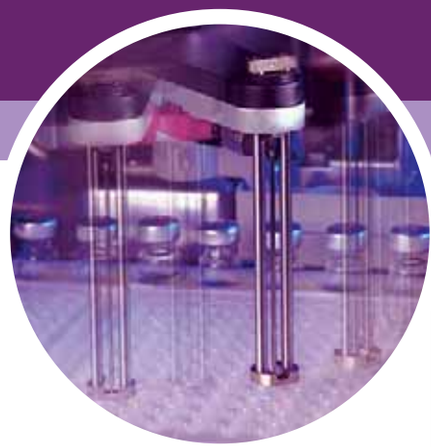
G1313-68709

Autosampler Parts and Supplies

Agilent offers a variety of autosampler supplies that increase the flexibility of your 1100/1200 System.

1100/1200 Series Autosampler Kits

Description	Part No.
PM Kit for 1200 Autosampler SL Includes PEEK rotor seal, needle seat, needle, 2 seals, and 15 finger caps	G1329-68719
G1313/27A Autosampler maintenance kit Includes 1 rotor seal (Vespel), 1 needle, 1 needle seat, 2 metering seals, 15 finger caps	G1313-68709
G1313/27A Autosampler accessory kit Includes 3 hex keys, 2 wrenches, tubing, 1 label halftray, wrist strap, 15 finger caps, 0.17 ID x 180 mm capillary, 100 screw top 2 mL vials and caps, tray for 40 2 mL vials, tray for 15 6 mL vials	G1313-68705
G1313/27A Autosampler Preventative Maintenance Kit Includes 1 each: rotor seal, isolation seal, stator face, needle, needle seat	5065-4498
PM Kit for standard autosamplers Includes Vespel rotor seal, standard needle seat, and needle	G1313-68730
Light protection kit for G1329A Includes opaque front and side doors and front cover	G1329-68718
Door replacement kit for G1329A Includes transparent front and side doors	G1329-68727



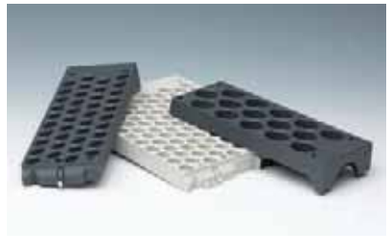
Sapphire piston and seals

1100/1200 Metering Device Supplies

Infrequently, the metering device seal and piston may need replacement if you see loss in injection volume precision or metering device leaking.

1100/1200 Metering Device Supplies

Description	Part No.
Sapphire Piston	5063-6586
Piston Seals, graphite filled Teflon (reversed phase), 2/pk	5063-6589
Metering valve seal, 900 µL	0905-1294
Sapphire piston assembly, 900 µL	5062-8587
Capillary to metering device	G1313-87301
Multidraw upgrade kit for G1313A/G1327A/G1329A autosamplers Includes 500 µL capillary, 1500 µL capillary, and ZDV union	G1313-68711
Seat capillary, 500 µL, 0.5 mm ID	G1313-87307
Seat capillary, 1500 µL, 0.9 mm ID	G1313-87308
1/16 in. union, zero dead volume, stainless steel	0100-0900
Sample loop, 100 µL	01078-87302
Sample loop, 900 µL	G1313-87303



Autosampler trays

G1313/27/29A 1100/1200 Series Autosampler Supplies

Description	Part No.
100 position tray for 2 mL vials, thermostattable	G1329-60011
40 position tray for 2 mL vials	G1313-44512
15 position tray for 6 mL vials	G1313-44513
External vial tray for 17 vials (disposal position)	G1313-60004
Disposal Tube for external vial tray	G1313-27302
Standard needle seat, PEEK, 0.17 mm ID capillary, 2.3 µL	G1313-87102
Needle assembly for use with PEEK seat	G1313-87203
Needle seat PEEK without capillary, G1313A	G1313-87104
PEEK seat tubing, 0.17 mm ID, 100 mm, 2.3 µL	G1313-87302
PEEK capillary, 0.25 mm ID, 160 mm connecting valve with metering device of G1313 autosampler	G1313-87306
PEEK loop capillary for 100 µL sample	G1313-87309
Extended loop capillary, 0.25 mm, 180 cm	G1329-87302
Needle arm kit	G1313-68713
Finger Caps, 15/pk	5063-6506
Waste adapter, 1100 Series autosamplers	G1313-43206
Waste adapter, 1200 Series autosamplers, gray	G1313-43216
Waste tube	G1313-87300
Waste tubing, 5 m, 6.5 mm ID, corrugated polypropylene	5062-2463
Post column reaction kit for 1100 LC	G1313-68712

6 mL vials, caps, and septa

6 mL Vials, Caps, and Septa for 1100/1200 Series Autosampler

Description	Unit	Part No.
Clear screw vial, 16 mm cap size	100/pk	9301-1377
Screw caps, 16 mm	100/pk	9301-1379
PTFE/silicone septa, 16 mm	100/pk	9301-1378
Clear crimp vial, 20 mm cap size	100/pk	9301-1419
Crimp caps, PTFE/silicone septa, 20 mm	100/pk	9301-1425
Clear screw extreme high recovery vials, 16 mm cap size	30/pk	5188-2757
PTFE/silicone septa, pre-slit, 16 mm	100/pk	5188-2758
Clear, 5 mL high recovery screw cap vials	30/pk	5188-5369

G1387A 1100/1200 Series Micro Autosampler

Description	Part No.
Capillary sampler accessories kit	G1329-68715
2 Position/6 Port Micro Injection Valve	0101-1050
Rotor seal, Vespel, 2 grooves	0100-2088
Stator	0100-2089
6 fittings, 2 plugs, PEEK	5065-4410
Sapphire piston, 2 mm	5064-8293
Piston seal, 2 mm	5022-2175
Seal support assembly	G1377-60002
Seat assembly, 100 µm ID, 1.2 µL	G1329-87101
Seat assembly, 50 µm ID, 0.3 µL	G1329-87103
Needle assembly, micro LC autosampler	G1329-80001
Waste tube, FEP, 1.6 mm OD, 0.8 mm ID	G1375-87326
Stainless steel capillary, pump-ALS 90 cm, 0.17 mm ID	G1329-87300

G1367A well plate autosampler

G1367A/B/C 1100/1200 Series Well Plate Autosampler

Description	Part No.
Well plate sampler accessories kit Includes 100/pk 2 mL screw top vials & caps, 10/pk 0.5 mL 96 well plates, tools, 380 mm 0.17 mm capillary, CAN cable	G1367-68705
PM Kit for well plate autosamplers includes Vespel rotor seal, needle, needle seat, peristaltic pump cartridge and seal tight nut	G1367-68730
Needle assembly, well plate autosampler (green)	G1367-87200
Needle assembly, well plate autosampler (new, for SN greater than DE21001534)	G1367-87201
Seat assembly, 0.17 mm ID, 2.3 µL	G1367-87101
Seat assembly, 0.12 mm ID, 1.2 µL	G1367-87102
Seat assembly for G1367C well plate autosampler without capillary	G1367-87104
Seat capillary 0.17 x 100 mm, 0.8 mm OD use with G1367-87104 seat	G1367-87302
Seat capillary 0.12 x 100 mm, 0.8 mm OD use with G1367-87104 seat	G1367-87303
Stainless steel capillary, 210 x 0.12 mm, male to male, pre-swaged	G1316-87328
Stainless steel capillary, 250 x 0.17 mm, male to male, pre-swaged	G1367-87304
Stainless steel capillary, 250 x 0.12 mm, 1 fitting	G1373-87300
Loop capillary, 100 µL	G1367-87300
Peristaltic pump	5065-4445
Well plate tray, 2 well plates, 10 vials (supports 50 mm plates)	G2258-60011

G1377A 1100/1200 Series Micro Well Plate Autosampler

Description	Part No.
Micro well plate sampler accessories kit Includes 100/pk 2 mL screw top vials & caps, 10/pk 0.5 mL 96 well plates, tools, 40 µL loop, 50 cm 50 µm fused silica/PEEK capillary, 75 µm seat capillary, CAN cable	G1377-68705
Seat Capillary, 50 µm, 150 mm, Fused silica/PEEK with fittings	G1375-87300
Seat Capillary, 100 µm, 150 mm, Fused silica/PEEK with fittings	G1375-87317
Seat Capillary, 75 µm, 150 mm, Fused silica/PEEK with fittings	G1375-87316
Needle assembly, micro well plate sampler	G1377-87201
Loop capillary, 8 µL	G1375-87315
Loop capillary, 40 µL	G1377-87300
SS capillary, 0.25 mm ID, 12 cm long Connecting Rheodyne valve - waste	G1377-87301
Tool for micro seal capillary mounting	G1377-44900

Micro well plates

G2255-68700

5022-6539

Well Plates

Description	Unit	Part No.
96 Well plates, 0.5 mL, polypropylene	120/pk	5042-1385
96 Well plates, 0.5 mL, polypropylene	10/pk	5042-1386
96 Deep well plates, 1 mL, polypropylene	50/pk	5042-6454
Closing mats for 96 well plates, silicone	50/pk	5042-1389
96 Well Plates, 150 µL, conical, polypropylene	25/pk	5042-8502
384 Well plates, 90 µL, polypropylene	30/pk	5042-1388
96 Deep well plate with glass inserts, 0.35 mL, caps/septa	1/ea	5065-4402
Glass inserts, 350 µL	1000/pk	5188-5321
Caps/septa for glass inserts	1000/pk	5188-5322
Vial plate for 54 x 2 mL vials	6/pk	G2255-68700
Tray for 27 Eppendorf safe lock tubes, 0.5/1.5/2 mL		5022-6538
Vial plate for 15 x 6 mL vials		5022-6539

G2258A 1100/1200 Series Dual Loop Autosampler

Description	Part No.
Needle assembly, dual loop autosampler	G2258-68710
Well plate tray, 2 well plates, 10 vials (supports 50 mm plates), 1100	G2258-60001
Well plate tray, 2 well plates, 10 vials (supports 50 mm plates)	G2258-60011
Twin needle seat, dual loop autosampler	G2258-87102
Front seat tube, SS, 0.5 mm ID, 10 cm long	G2258-87316
Back seat tube, SS, 0.5 mm ID, 12 cm long	G2258-87315
Front seat tube, PTFE, 0.2 mm ID, 10 cm long, 5 µL	G2258-87312
Back seat tube, PTFE, 0.25 mm ID, 12 cm long, 6 µL	G2258-87313
Waste tube, 0.8 mm ID, 15 cm long	G2258-87310
Waste tube, 0.8 mm ID, 10 cm long	G2258-87311
Buffer loop extension assembly	G2258-60002
Buffer loop tubing assembly, PTFE, 1.4 mm ID, 2.0 mm OD	G2258-87300
Drawing tube assembly for flush solvent with filter and bottle cap	G2258-87307
Tubing assembly, solvent flush	G2258-87314
Fitting screws, SS, 10-32, 4 mm, 5/pk	5065-9948
PEEK ferrule and stainless steel ring for 2 mm tube, 5/pk	5065-9950
Union, PEEK for 1/8 in. OD tubing, 1/4-28 internal threads	0100-2410
10 Port, Dual Loop Valve	0101-1385
Rotor seal, Vespel, 10 port valve	0101-2415
Stator, DuraLife, 10 port valve	0101-1390
Vial plate for 15 x 6 mL vials	5022-6539
Vial plate for 54 x 2 mL vials, 6/pk	G2255-68700
Frit adapter, PTFE for 1/8 in. OD tubing	G2258-23201
Piston for G2258A Dual Loop ALS, 5 mL	G2258-60003
Piston guide, PEEK for G2258A ALS	G2258-23101
Piston seal for G2258A Dual loop ALS	0905-1599

G2258-87102

5065-9948

5065-9950

G2260 preparative autosampler

G2260A 1100/1200 Series Preparative Autosampler

Description	Part No.
Accessory kit Prep autosampler (G2260A) Includes stainless steel connecting capillaries, hex keys, wrenches, 100/pk 2 mL screw cap vials and caps, tray for 6 mL vials, stainless steel union, and other parts	G2260-68705
MBB Injection valve for G2260A sampler	0101-1267
PEEK rotor seal and stator face	0101-1268
Stator head for 0101-1267 valve	0100-2195
Needle seat, prep autosampler, 0.5 mm ID, 20 µL	G2260-87101
Needle assembly for G2260-87101 needle seat	G2260-87201
Capillary injection valve to preparative head, SS, 16 cm, 0.5 mm	G2258-87301
Capillary sampler to column, SS, 60 cm, 0.5 mm	G2260-87300
Capillary pump to sampler, SS, 40 cm, 0.5 mm	G2260-87301
Multi draw loop for use with G2260A, recommended for injection volumes up to 5 mL	G2260-68711

Autosampler Supplies for Agilent HPLC Systems with CTC Autosamplers

Agilent now offers a portfolio of CTC-recommended supplies for your HTS and HTC PAL autosamplers. This complete selection of vials, caps, syringes, and valves meets Agilent's stringent standards and specifications.

HTS and HTC PAL Liquid Injection Vials and Caps

HTS and HTC PAL high-throughput LC injection systems are configured to cope with today's high-throughput LC/MS demands. And Agilent brings you a wide choice of well plates, vials, and caps that are engineered to work with these injectors, providing the flexibility you need.

HTS and HTC PAL Liquid Injection Vials and Caps

Description	Unit	Part No.
2 mL vials		
Screw top vial, wide opening, clear	100/pk	5182-0714
Screw top vial, polypropylene, with 0.2 mL integrated glass insert	100/pk	5188-5390
Crimp top vial, wide opening, clear	100/pk	5181-3375
Crimp/snap top vial, clear, write-on spot	100/pk	5182-0546
2 mL caps		
Screw cap, PTFE/silicone septa	100/pk	5182-0720
Screw cap, pre-slit PTFE/silicone septa	100/pk	5183-2076
Crimp cap, silver aluminum, PTFE/silicone septa	100/pk	5182-0552
Snap cap, blue polyethylene, PTFE/silicone septa	100/pk	5182-0541
Micro vials		
Crimp top vial, 0.8 mL, amber glass, flat bottom	1000/pk	5183-4487
Crimp top vial, 0.1 mL, clear, tapered	500/pk	5180-0844
Crimp top vial, 0.3 mL, clear, round	500/pk	5180-0841
Crimp top vial, 0.7 mL, amber, round	500/pk	5180-0805
Crimp top vial, 0.5 mL, amber, conical	500/pk	5180-0806
Micro caps		
Crimp caps with PTFE/silicone septa	500/pk	5180-0842

HTC PAL autosampler

HTS and HTC PAL Liquid Injection Syringes

Designed specifically for CTC autosamplers, these X-type syringes feature zero carryover and a long-lasting plunger for applications that demand precision and productivity. They are strongly recommended for high-throughput applications.

Agilent offers a wide selection of fixed needle, 22-gauge, Pointstyle 3 syringes to accommodate a variety of applications.

HTS and HTC PAL Liquid Injection Syringes

Volume (µL)	Description	Unit	Gauge	Needle	Part No.
25	X-type Fixed Needle		22	22S/51/3	G4200-80117
	Replacement plunger for X-type syringe	3/pk			G4200-80112
50	X-type Fixed Needle		22		5188-6485
	Replacement plunger for X-type syringe	3/pk			5188-5395
100	X-type Fixed Needle, fast aspiration and eject		22	22/51/3	G4200-80118
	X-type Fixed Needle, low dead volume		22	22S/51/3	G4200-80119
	Replacement plunger for X-type syringe	3/pk			G4200-80111
10	Fixed Needle		22	22S/51/3	G4200-80113
	Replacement plunger	10/pk			G4200-80103
25	Fixed Needle		22	22S/51/3	G4200-80114
	Replacement plunger	10/pk			G4200-80104
100	Fixed Needle		22	22/51/3	G4200-80115
	Fixed Needle		22	22S/51/3	G4200-80116
	Replacement plunger	10/pk			G4200-80105
250	Fixed Needle		22	22/51/3	G6500-80102
	Replacement plunger	10/pk			G4200-80102
500	Fixed Needle		22	22/51/3	G6500-80103
	Replacement plunger				G4200-80106
1000	Fixed Needle		22	22/51/3	G6500-80104
	Replacement plunger				G4200-80101
2500	Fixed Needle		22	22/51/3	G6500-80105
	Replacement plunger				G4200-80107
5000	Fixed Needle		22	22/51/3	G6500-80106
	Replacement plunger				G4200-80108

X-type syringe and plungers

5188-6486

HTS and HTC PAL Liquid Injection Valve Supplies

Whether your HTS or HTC PAL autosampler uses the NEW Agilent proprietary Rheodyne high-pressure 600-bar injection valve or Valco Cheminert injection valves, Agilent can help you find a sample loop to meet your most challenging applications – including:

- Rheodyne 600 bar injection valve loops, which include high-pressure Swagelok fittings.
- Cheminert metal loops, which feature two 1/16 in. stainless steel nuts and two stainless steel ferrules.
- Cheminert PEEK loops, which include two PEEK nuts and two PEEK ferrules.

HTS and HTC PAL Liquid Injection Valve Loops and Needle Seals

Description	Part No.	Description	Part No.
Rheodyne 600 bar Valve Supplies			
Stainless Steel Loops: Supplied with Swagelok fittings required for high pressure			
5 µL	5188-6486	50 µL	5188-6489
10 µL	5188-6487	100 µL	5188-6490
20 µL	5188-6488		
Stator, Rheodyne 600 bar			5188-6491
RheBuild Kit, 600 bar, includes Rotor Seal and 3/32 hex wrench			5188-6492
Needle Seals, Rheodyne valve, 600 bar, 10/pk			5188-6478
Cheminert Valve Supplies			
PEEK Loops:			
2 µL	5188-6469	10 µL	5188-6467
5 µL	5188-6470	20 µL	5188-6468
Metal Loops: Include two 1/16 in. stainless steel nuts and two stainless steel ferrules			
2 µL	5188-6457	500 µL	5188-6463
10 µL	5188-6458	1000 µL	5188-6464
50 µL	5188-6460	2000 µL	5188-6465
100 µL	5188-6461	5000 µL	5188-6466
250 µL	5188-6462		
PEEK Needle Seal, Valco, 22 gauge, 10/pk			5188-6476
Teflon Needle Seal, Valco, 22 gauge, 10/pk			5188-6477

Fraction Collector Maintenance

A higher level of purity for results that stand up to scrutiny.

When you are under pressure to generate better results faster, there is no time to compromise on recovery and purity. And with Agilent's 1100 and 1200 Series fraction collectors, you will not have to.

Agilent fraction collectors are designed to process data in real time for instantaneous and precise fraction collection while increasing throughput on your purification system. So you can be certain you are getting the highest degree of recovery and purity for your fractions – even with low flow rates.

In this section, you will find essential details about our analytical scale (AS) and preparative scale (PS) fraction collectors, including:

- Fraction collector maintenance, including simple repairs you can perform without a service call.
- Guidelines for maintaining the micro fraction collector and spotter.
- Agilent-engineered parts, such as trays, collecting tubes, plates, and needle assemblies.
- MALDI spotting accessories.

Analytical and Preparative Fraction Collector Maintenance

Fraction collectors/spotters are very user friendly, and do not require much maintenance. However, you should perform the following routine procedures:

- Exchange the tubing at least once per year.
- Replace the capillaries.
- Replace the flap septum.

Fraction collector

Tubing Replacement

There are two types of tubing available to connect the valve with the needle: preparative scale PTFE tubing (0.8 mm ID) and analytical scale tubing (0.25 mm ID). Both types should be replaced when they become contaminated, worn or damaged.

Before replacing the tubing, be sure to...

1. Position the fraction collector's transport unit in the "Home" position.
2. Remove all installed trays from the tray base.
3. Position the transport unit in the "Change Parts" position.
4. Turn off the instrument.

Consult your user's manual for detailed replacement instructions.

Simple Repairs

Procedure	When to Perform
Replace the inlet/waste tubing	Once per year – or when you notice signs of damage or wear
Replace the valve-to-needle tubing	Once per year – or when you notice signs of damage or wear
Exchange the preparative needle assembly	When the needle shows signs of damage or blockage
Exchange the analytical needle assembly	When the needle shows signs of damage or blockage or when using the short needle assembly with high test tubes (>45mm)
Exchange the diverter valve	When the valve is leaking or not switching properly
Exchange the internal tray	When the flow delay sensor no longer works
Repair or exchange a funnel within the internal tray or funnel tray	When defective, leaky, blocked or contaminated

Trays, collecting tubes and plates for 1100/1200 Series Fraction Collectors

Agilent offers a broad range of trays, glass collecting tubes and well plates. When deciding what's best for your application, consider the size and number of the fractions you want to collect.

Collecting Tubes and Trays

Tray Part No.	Hole Diameter (mm)	No. of Tubes	Tube Dimensions	Tube Part No.	Unit
G1364-84523	30	40	30 x 48 mm	5042-6470	100/pk
G1364-84524	25	60	25 x 100 mm	5042-6459	100/pk
G1364-84525	16	126	16 x 48 mm	5022-6533	100/pk
G1364-84516	12	215	12 x 48 mm	5022-6534	100/pk
G1364-84532	Funnel tray	40	Any size		

Well plate tray

Well Plate Trays

Description	Part No.
Tray for 4 well plates, cooled	G1364-84521
Tray for 4 plates, adjustable, cooled	G1364-84531
Tray for 2 well plates, 10 funnels cooled	G1364-84522
Tray for 2 well plates, 10 vials, 2 mL	G1367-60001

Well Plates

Description	Unit	Part No.
96 Well plates, 0.5 mL, polypropylene	120/pk	5042-1385
96 Well plates, 0.5 mL, polypropylene	10/pk	5042-1386
96 Deep well plates, 1 mL, polypropylene	50/pk	5042-6454
Closing mats for 96 well plates, silicone	50/pk	5042-1389
96 Well Plates, 150 µL, conical, polypropylene	25/pk	5042-8502
384 Well plates, 90 µL, polypropylene	30/pk	5042-1388
384 Well plates max 45 µL skirted	25/pk	5188-5375
96 Deep well plate with glass inserts, 0.35 mL, caps/septa		5065-4402
Glass inserts, 350 µL	1000/pk	5188-5321
Caps/septa for glass inserts	1000/pk	5188-5322
Vial plate for 54 x 2 mL vials	6/pk	G2255-68700
Tray for 27 Eppendorf safe lock tubes, 0.5/1.5/2 mL		5022-6538
Vial plate for 15 x 6 mL vials		5022-6539
Plate for 24 tubes with 18 mm diameter		5042-8544

5022-6538

1100/1200 Fraction Collector Capillary Kits and Needles

1100/1200 Module	Max Flow Rate	Tubing ID (mm)	Tubing Kit	Needle Length	Needle	Typical Use
G1364B	100 mL/min	0.8 mm ID	G1364-68711		G1364-87201	Tubes (max 100 mm)
G1364C	1 mL/min	0.15 mm ID	G1364-68723	50 mm	G1367-87200	Tubes (max 48 mm), well plates, vials
	10 mL/min	0.25 mm ID	G1364-68712	50 mm	G1367-87200	
	10 mL/min	0.25 mm ID	G1364-68712	20 mm	G1364-87202	Funnel tray (tubes max 75 mm)
	100 mL/min	0.8 mm ID	G1364-68711	20 mm	G1364-87202	
G1364D	max 4 µL/min	25 µm ID	G1364-87304			MALDI targets, well plates
	4-30 µL/min	50 µm ID	G1364-87305			
	30-100 µL/min	100 µm ID	G1364-87306			

Micro Fraction Collector/Spotter Maintenance

Agilent offers three types of connecting capillaries – each with different internal diameters. We recommend replacing the capillaries and flap septum every six months – or when contaminated, blocked, worn, or visibly damaged.

Before replacing the capillary, be sure to:

1. Place the transport unit of the micro fraction collector/spotter in the "Home" position.
2. Remove all installed trays from the tray base.
3. Place the transport unit in the "Change Parts" position.
4. Turn off the instrument.
5. Unscrew the micro fraction/spotter capillary from the flow cell of the detector.

Micro fraction collector

Simple Repairs

Procedure	When to Perform
Replace fraction collector capillary	At least every six months or when worn, blocked or damaged
Exchange the capillary guiding assembly	When bent or damaged
Exchange the internal tray	When the flow delay sensor no longer works properly
Exchange the flap septum and waste tubing	At least every six months Or when defective or contaminated

G1364-83205

G1364-60021

5022-6541

5023-0208

G1364D 1100/1200 Micro Fraction Collector

Description	Part No.
MALDI spotting adapter for G1364D Micro fraction collector	G1364-83205
Well plate adapter assembly for G1364C/D	G1364-60021
Flap septum, PEEK, for internal tray	G1364-27107
Tray for 4 plates, adjustable, cooled for use with G1364D Micro fraction collector	G1364-84511
Fused silica/PEEK capillary, 25 µm, 50 cm	G1364-87304
Fused silica/PEEK capillary, 50 µm, 50 cm	G1364-87305
Fused silica/PEEK capillary, 100 µm, 50 cm	G1364-87306
Waste tube, PTFE, 20 cm, 1.4 mm ID, 2.0 mm OD	G1364-86711
MALDI plate carrier Bruker	5022-6541
MALDI plate carrier Bruker PAC	5022-6546
MALDI plate carrier ABI	5022-6542
MALDI plate carrier ABI Opti-TOF	5023-0238
MALDI plate carrier Agilent	5022-6543
MALDI plate carrier Micromass	5022-6544
Target Plate for AP-MALDI LC/MS	G1972-60025
Calibration Plate Bruker	5023-0208
Calibration Plate ABI 192	5023-0209
Calibration Plate ABI 10x10 & 20x20	5023-0213
Calibration Plate Agilent	5023-0214
Calibration Plate Micromass	5023-0215
On-line matrix Kit for MALDI spotting Includes BCD board/cable, syringe, needles, adapters, connector, capillary	G1364-68706
Adapter, female to female 1/4-28	5042-8517
Adapter, male luer to female 1/4-28	5042-8518
Syringe, glass, 1 mL, 1/4-28 connector	5181-1541
Micro T-connector, PEEK, swept vol 29 nL, with 1/32 in. ID fittings	5042-8519
MALDI Spotting tips, PTFE, 10/pk	G1364-81701

Pump Maintenance

Regular pump maintenance will help you lower your operating costs and generate precise results you can feel confident about.

You can count on Agilent isocratic, binary, quaternary, capillary, and preparative pumps for superior flow and composition stability. And by following a regular maintenance routine, you can also count on maximum uptime and a steady, accurate solvent flow for the life of the pump.

On the following pages, you will find step-by-step instructions for these procedures:

- Exchanging the PTFE frit
- Cleaning the outlet ball valve
- Replacing the active inlet valve cartridge
- Changing the seals and pistons
- Cleaning or replacing the solvent inlet filters

You may perform these procedures all at once, or as needed. Keep in mind that some parts may need replacing more often than others, depending on your application and solvent preparation procedures.

Purge Valve – Exchanging the PTFE Frit

(1100/1200 standard pump modules)

Purge valve assembly

Purge valves feature a gold seal held in place with a plastic cap. Small leaks can occur here, so you will need to replace the gold seal after the valves have been removed more than once or twice.

When replacing the frit, make sure that the cutout side faces up, which provides more surface area on the side facing the solvent flow.

1. Remove capillary and waste tube.
2. Use a 14 mm wrench to unscrew the valve.
3. Remove the plastic cap and the gold seal.
4. Use tweezers to remove the old frit and install a new frit.
5. Replace the gold seal and the plastic cap.
6. Install the valve.

Purge Valve

Description	Part No.
1100 Pump Start Up Kit Includes 1 outlet cap, 2 PTFE frits, 4 piston seals, 1 outlet gold seal, 2 inlet filters, 1 cartridge for active inlet valve	G1311-68710
PTFE frits, 5/pk	01018-22707
Gold seal, outlet	5001-3707
Outlet caps, 4/pk	5062-2485
Purge valve assembly	G1311-60009

Tips & Tools

Realign the purge valve waste tube in the correct orientation during installation.

Outlet ball valve parts

Cleaning or Exchanging the Outlet Ball Valve

You should change the outlet ball valve as part of your regular maintenance routine – or when the valve is leaking internally. Typically, if the pressure ripple is unstable, you should run a leak test to determine if the outlet ball valve needs to be replaced.

1. Remove the capillary from the valve.
2. Use a 14 mm wrench to remove the valve.
3. Remove the plastic cap and gold seal.
4. Clean the ball valve in an ultrasonic bath. (Or, replace with a new valve).
5. Replace the gold seal and cap.
6. Use a 14 mm wrench to reinstall the valve.

Outlet Ball Valve

Description	Part No.
Outlet ball valve, (quaternary, isocratic)	G1311-60012
Outlet ball valve for binary pump, 400 bar	G1312-60012
Gold seal, outlet	5001-3707
Outlet caps, 4/pk	5062-2485
Binary pump outlet valve SS sieve, 10/pk	5063-6505

Tips & Tools

The outlet ball valve of the binary pump has an additional sieve (5063-6505).

Replacing the Active Inlet Valve Cartridge

(All pumps except the G1361A preparative pump)

You should service the active inlet valve when the pressure ripple is unstable and a leak test confirms a problem with the valve due to internal leaking. The active inlet valve contains a cartridge that you can exchange as follows:

1. Use a 14 mm wrench to remove the active inlet valve.
2. Change the cartridge.
3. Reinstall the active inlet valve.

Active Inlet Valve (AIV)

Active Inlet Valve (AIV)

Description	Part No.
Active inlet valve, without cartridge	G1312-60025
Cartridge for active inlet valve, 400 bar	5062-8562
Cartridge for active inlet valve, 600 bar	G1312-60020
Gold Seal for inlet valve	5001-3708

Tips & Tools

Be sure to properly position the Active Inlet Valve cable when you reinstall the valve.

Pistons and Seals

Sapphire piston and seals

Agilent pistons are made from a high purity, monocrystalline sapphire for maximum durability. Although ceramic pistons can be manufactured at a lower cost, ceramic is a sintered, polycrystalline material, which can cause undesirable variations during the production process.

Agilent sapphire pistons...

- Are meticulously cut at just the right angle, making them the most durable – and longest lasting – pistons in the world.
- Are precisely aligned in their stainless steel holder to minimize wear on the piston and seal.

Agilent seals are designed to fit snugly around our pistons, and are capable of adapting to a wide range of flow rates and pressures.

Agilent piston seals...

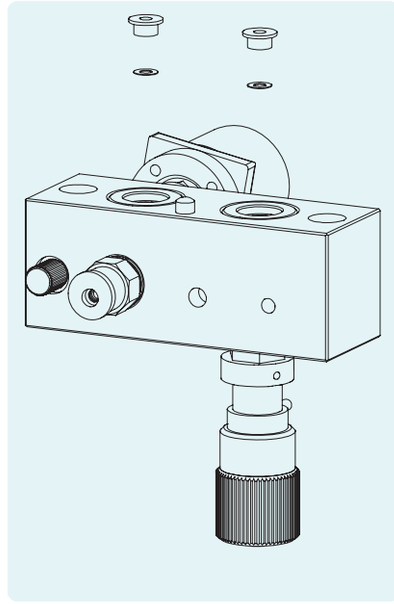
- Are spring-loaded and engineered to deliver optimal performance over highly dynamic flow and pressure ranges.
- Are manufactured from a proprietary polymer blend, and feature a spring made from the same high-quality stainless steel that is used in our pump's flow path.

The combination of our piston and seal has undergone extensive testing under temperature stress, with all common HPLC solvents, and in many instruments. More importantly, they yield consistent, reproducible results.

Changing the Pump Seals

(All pumps except the G1361A preparative pump)

Pump seals should be replaced when there are leaks on the bottom of the pump head, when retention times are inconsistent, or when the pressure ripple is unstable.



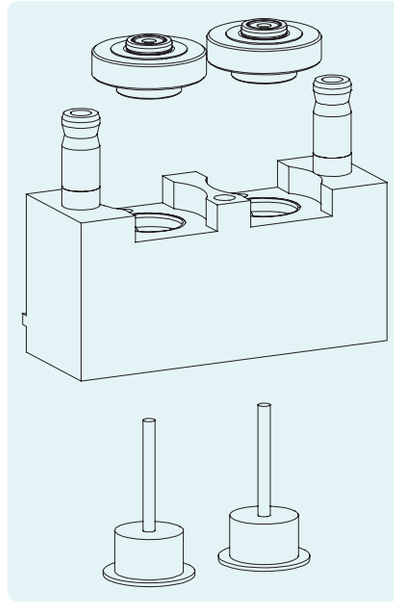
1. Disassemble the pump head and use a piston to remove the two seals.
2. Clean the pump chambers and seal areas by flushing with solvent and wiping with a lint-free cloth.
3. Insert new seals.
4. Reassemble the pump head.
5. Perform the seal wear-in procedure (Standard seals 5063-6589 only).

The wear-in procedure involves flushing the seals with isopropanol at high pressure while they are in place.

Changing and Inspecting the Sapphire Pistons

(All pumps except the G1361A preparative pump)

Each time you replace the seals, examine the pistons for scratches, which can cause small, but damaging leaks.



1. Disassemble the pump head assembly.
2. Remove any deposits – particularly buffers – from the piston surface using alcohol or toothpaste. Replace the pistons if scratched.
3. Rinse thoroughly in alcohol and HPLC-grade water.
4. Reassemble the pump head.
5. Check to make sure there are no fractures in the springs. Replace piston housing assembly if springs are damaged.
6. Reinsert the pistons.

Seals and Pistons

Description	Part No.
Sapphire Piston	5063-6586
Piston Seals, graphite filled Teflon (reversed phase), 2/pk	5063-6589
Piston Seals, polyethylene (normal phase), 2/pk	0905-1420
Piston housing assembly (includes springs)	G1311-60002
Extended PM kit Contains 5063-6589 piston seals (2), 01018-22707 PTFE frits (5/pk), 5062-8562 cartridge active inlet valve, G1311-60012 outlet ball valve & 5063-6586 pistons (2)	5065-4499

Seal Wear-In Procedure

Recommended after replacing standard seals only (5063-6589)

Important: Do not perform this procedure when installing normal phase seals (0905-1420). It will cause severe damage to the seals.

Tools

- Solvent bottle or beaker
- Isopropanol
- AIV adapter (0100-1847)
- Restriction capillary (5022-2159)

1. Fill the bottle with 100 mL of isopropanol, and place it in the solvent cabinet. Then, place the new pump head's tubing (including bottle head assembly) into the bottle.
2. Screw the adapter to the Active Inlet Valve. Connect the inlet tube from the bottle head directly to the adapter (quat pumps and binary pumps with selection valves only).
3. Connect the restriction capillary to the purge valve. Insert the other end of the capillary into a waste container.
4. Open the purge valve and purge the system for 5 minutes with isopropanol at a flow rate of 2 mL/min.
5. Close the purge valve and set the flow to a rate that is adequate to achieve a pressure of 350 bar. Pump for 15 minutes at this pressure to wear in the seals. You can monitor the pressure at your analog output signal using the handheld controller, ChemStation or any other controlling device connected to your pump.
6. Turn OFF the pump flow and slowly open the purge valve to release pressure from the system.
7. Disconnect the restriction capillary and reconnect the outlet capillary to the purge valve. Reconnect the appropriate tubing to the Active Inlet Valve.
8. Rinse your system with the solvent that you plan to use for your next application.

Pump Head Seal Wash Kits

(Used with standard and capillary pump)

The routine use of highly concentrated buffer solutions (100 mM) will reduce the life of the seals and pistons in your 1100/1200 Series pump. You can counteract the problem with one of our seal wash kits, which flushes the backside of the seal with a wash solvent; water/isopropanol (90/10) is recommended as the wash solvent. The continuous seal wash uses gravity to flow the wash solvent, and is compatible with 1100/1200 standard and capillary pumps. The active seal wash uses a peristaltic pump to flow the wash solvent, and is compatible with 1100 pumps with the following serial numbers and higher, as well as the 1200 Series pump:

- G1310A: DE40906378
- G1311A: DE40926032
- G1312A: DE40914884

5042-8507

Seal Wash

Description	Part No.
Active seal wash kit for isocratic or quaternary pumps Includes 2 wash seal gaskets, 2 pump seals, peristaltic pump (includes pump cassette and motor), 2 seal keepers, 2 support ring assemblies, seal insert tool, silicone tubing	G1311-68711
Active seal wash kit for binary pumps Includes 4 wash seal gaskets, 4 pump seals, 2 peristaltic pumps (includes pump cassette and motor), 4 seal keepers, 4 support ring assemblies, seal insert tool, silicone tubing	G1312-68711
Continuous seal wash kit Includes 2 wash seal gaskets, 4 m flex tubing, 2 pump seals, 1 flow regulator, 2 seal keepers, 2 support ring assemblies, 20 mL luer lock syringe, seal insert tool, abrasive paper	01018-68722
Silicone Tubing, 1 mm ID, 3 mm OD, 5 m	5065-9978
Seal Keeper	5001-3743
Wash seal	0905-1175
Wash seal gasket	5062-2484
Peristaltic pump cassette with silicone tubing	5042-8507

Pump Supplies

Solvent reservoirs, 1L

G1311/12/54A 1100/1200 Series Standard Pump

Description	Part No.
Pump Start Up Kit Includes 1 outlet cap, 2 PTFE frits, 4 piston seals, 1 outlet gold seal, 2 inlet filters, 1 cartridge for active inlet valve	G1311-68710
PM Kit for isocratic/quaternary pump includes piston seal, PTFE frits, 2 gold seals and 2 outlet caps	G1310-68730
PM Kit for binary pump, includes 4 piston seals, PTFE frits, 3 gold seals, 2 sieves and 3 outlet caps	G1312-68730
PM Kit for seal wash option includes 2 wash seals and a pack of 6 wash seal gaskets	G1310-68731
1100/1200 Pump accessory kit	G1311-68705
Bottle head assembly, for F29/32 tapered inlet bottle	G1312-68706
Bottle head assembly, for F29/32 tapered solvent bottle	G1312-68716
Solvent reservoir, 1 liter, F29/32	9301-0656
Bottle head assembly, for screw bottle	G1311-60003
Solvent reservoir, 1L	9301-1420
Solvent reservoir, 1L with cap	9301-1421
Solvent reservoir, amber, 1L For use with bottle head assembly	9301-1450
Bottle cap with 3-hole insert	5063-6531
Solvent mixer, 1100 Series	G1312-87330
Capillary, damper to purge valve	G1312-67301
Tubing kit, degasser to pump 4/pk, 30 cm pieces of tubing with screws and bushings	G1322-67300
Seal keeper, ceramic, hipped	5042-8952

G1312B 1200 Series Binary Pump SL

Description	Part No.
PM Kit for binary pump, includes 4 piston seals, PTFE frits, 3 gold seals, 2 sieves and 3 outlet caps	G1312-68730
Active inlet valve, without cartridge	G1312-60025
Cartridge for active inlet valve, 600 bar	G1312-60020
Outlet valve for binary SL pump, 600 bar	G1312-60022
Purge valve assembly, 600 bar	G1312-60023
Seal keeper, ceramic	5042-8586
Stainless steel capillary 400 x 0.17 mm, m/m, ps/ps pump to autosampler	G1312-87303
Stainless steel capillary 700 x 0.17 mm, m/m, ps/ps pump to cooled ALS	G1312-87304
Stainless steel capillary 150 x 0.17 mm, m/m, ps/ps damper to pressure sensor	G1312-87305
Stainless steel capillary 105 x 0.17 mm, m/m, ps/ps damper to mixer or mixer to outlet valve	G1312-87306
Calibration capillary assembly	G1312-67500
Absorber capillary, 500 µL volume	G1312-87300
Stainless steel restriction capillary, 0.17 mm ID, T-piece to pressure sensor	G1312-87301
Solvent mixer, short, 200 µL	5067-1565

G1376A 1100 Series Capillary Pump

Description	Part No.
Capillary pump accessories kit	G1376-68705
Capillary pump PM kit	G1376-68710
Semi prep filter	5064-8273
Replacement frits, 0.5 µm, for P/N 5064-8273	5022-2185
Torque wrench adapter	G1315-45003
Bottle head assembly with tubing and filter	G1376-60003
Solvent inlet filter, stainless steel	01018-60025
Stainless steel capillary, pump-ALS 90 cm, 0.17 mm ID	G1329-87300
Extended flow range kit, 100 µL/min	G1376-68707

G1361A 1100/1200 Series Prep Pump

Description	Part No.
Accessory kit prep pump/gradient G1361A Includes stainless steel connecting capillaries, solvent mixer, 2 L solvent bottle, bottle head assembly, filter, glass stop valve, stainless steel union, tubing, and other parts	G1361-68707
Accessory kit for prep pump G1361A Includes stainless steel connecting capillaries, wrenches, 2 L solvent bottle, bottle head assembly, filter, glass stop valve, stainless steel union, tubing, and other parts	G1361-68708
PM kit for prep pump Includes 3150-0942 filter, 5022-2192 filter assembly, 5065-4445 peristaltic pump, 0890-1764 tubing and 4 prep pump seals	G1361-68710
Hi flow inline filter kit, glass, 10 µm Contains glass filter, caps and connecting tubing	5065-4500
Hi flow replacement inline filter, glass	5065-9901
O-ring, Viton, 30 mm	0905-1516
Glass filter, solvent inlet, 40 µm pore size	3150-0944
Frit adapter, PTFE for 4.7 mm OD tubing	G1361-23205
Stainless steel filter assembly with PEEK ring, 2 µm pore size	5022-2192

5065-4500

5065-9909

G1361A 1100/1200 Series Prep Pump

Description	Part No.
Solvent bottle, clear, 2 L, 2 inlets	5065-4421
Solvent bottle, amber, 2 L	9301-6341
Solvent bottle, clear, 2 L	9301-6342
Bottle head assembly for prep system	G1361-60022
Sapphire plunger	G1361-22402
Piston seal for G1361A Preparative Pump	5022-2188
Frit adapter	G1361-23204
Peristaltic pump	5065-4445
Valve assembly, inlet/outlet	G1361-60012
Stainless steel capillary outlet valve to 1 multi assembly, 0.6 x 173 mm, male/male	G1361-67300
Stainless steel capillary outlet valve 1 to multi assembly, 0.6 x 175 mm, male/male	G1361-67301
Stainless steel capillary EMPV to next module, 0.6 x 400 mm, male/male	G1361-67302
Stainless steel capillary EMPV to multi assembly, 0.5 x 160 mm, male/male	G1361-67303
Stainless steel capillary union to EMPV2, male/female	G1361-67304
Stainless steel capillary union to mixer, 0.6 x 40 mm, male/female	G1361-67305
Stainless steel capillary EMPV1 to union, male/female	G1361-67306
Manual prep injection valve kit, stainless steel With position sensing, 10 mL loop, 25 mL syringe, ring mounting bracket, start cable, SS connecting capillaries, 0.5 mm ID, 40 cm and 60 cm	5065-9922
Glass stop valve assembly Includes stop valve and 2 adapters	5065-9909
Inlet tubing, stainless steel for pressurized solvent	G1361-60008

Solvent Filtration

Unfiltered solvents or solvents contaminated with microbial growth – especially aqueous buffer solutions – present a common problem in HPLC. Aqueous media encourage microbial growth that can clog the solvent inlet filter and the HPLC; particulates in unfiltered solvents can have the same affect. Both microbial growth and particulates can also impact the performance of the pump. For instance, blocked solvent inlet filters can cause erroneous mobile phase composition, which will impact peak elution time. In addition, if the pump keeps working while the filters are blocked, the pump could draw in air instead of solvent. This will result in periodic baseline disturbances.

To avoid these problems we recommend these precautions:

- Use sterile solvent bottles, if possible.
- Filter solvents through sterile filters (< 1µm).
- Replace solvents every two days.
- Avoid exposure to direct sunlight, or use brown glass bottles.

Solvent Filters/Degassers

An added benefit of filtering solvents is that they are degassed at the same time. This is particularly beneficial if you do not have an on-line degasser in your system. The benefits of solvent filtration:

- Degasses eluents as particulates are removed.
- Prevents the formation of spurious peaks within the detector due to solvent outgassing at the low-pressure end of the chromatograph.
- Increases solvent inlet lifetime.
- Eliminates pump downtime caused by air locks and particulates in check valves.
- Decreases piston wear, while increasing column life.

Glass solvent filter degasser, 3150-0577

Solvent Filters/Degassers

Description	Part No.
HPLC Solvent filter/degasser assembly	3150-0577
Replacement Parts for 3150-0577	
Glass funnel, 250 mL	5188-2743
PTFE coated sieve	5188-2744
PTFE seal	5188-2745
Funnel base, glass	5188-2746
Filter Membranes	
Regenerated Cellulose filter membranes 47/45, 100/pk	3150-0576
Nylon filter membranes 47/45, 100/pk	9301-0895
PTFE filter membranes 47/45, 10/pk	3150-0509

Cleaning or Replacing the Solvent Inlet Filters

Clean or replace the solvent inlet filters at least once every 3 months. Stainless steel filters can be sonicated in isopropanol; however, glass filters cannot be sonicated as glass particles may break off or the filters may shatter.

To test if a solvent inlet filter is blocked, disconnect the solvent inlet tube at the end furthest from the filter and bottle head assembly. If the filter is in good condition, solvent will flow freely out of the solvent tube. If there is a blockage, little or no solvent will drip from the tube. If a blockage occurs, it's easiest to simply replace the solvent inlet filter. However, you can clean a glass filter by using the following procedure:

1. Remove the solvent inlet filters.
2. Replace the glass frit filters, or soak them in concentrated nitric acid (35%) for one hour. Be sure to flush well to avoid column damage.
3. Install either the new or cleaned solvent filters.

Solvent Filters for G1311/12/54A Pumps

Unfiltered solvents or solvents contaminated with microbial growth can clog solvent inlet filters, reducing the lifetime of the filter and impacting pump performance. Remember to clean or replace the solvent inlet filters at least once every 3 months.

Glass filter

Filter frit adapters, 5062-8517

Filter, frit adapters, 5062-8517

Inlet Filters		Frit Adapter				
Description	**Part No.**	**Description**	**Part No.**	**Frit Inlet ID (mm)**	**Tube OD (mm)**	**Recommended Use**
Glass filter, solvent inlet, 20 µm pore size	5041-2168	Frit adapter, PTFE, 3 mm, 4/pk	5062-8517	5	3.2	Analytical scale, micro scale
Glass filter, solvent inlet, 40 µm pore size	3150-0944	Frit adapter, 4mm, PTFE	G1361-23204	7	4	Preparative LC
Glass filter, solvent inlet, 40 µm pore size	3150-0944	Frit adapter, PTFE for 1/8 in. OD tubing	G2258-23201	7	3.2	G2258A Dual Loop autosampler

HPLC In-Line Filters

Column inlet frit contamination can increase column back pressure and reduce efficiency. Microbore column blockages are a particular problem, due to the small diameter of the inlet frit. To prevent blockages, always use the appropriate filters in your LC system. Agilent offers two types of high pressure in-line filter kits for use with any HPLC system:

Universal Solvent Filter

Ideal for microbore, narrow-bore, high-speed or standard analytical columns.

5064-8273

Universal solvent filters are installed between the LC pump and the injector, so particles from the solvent can be removed before they reach the injector. The filter assembly consists of a 4.8 mm frit, two inserts and a two-piece holder. The frit is placed between the tapered edges of the inserts in such a way that the solvent is evenly distributed over the whole surface of the frit. This provides efficient filtration and extends the life of the frit.

Low-volume Column Inlet Filter

A high-capacity filter with built-in efficiency.

5022-2165

This low-volume column inlet filter is positioned immediately before the LC column, so it can remove particles from both the injection system and the sample. With a frit diameter of only 2.1 mm – plus tapered inserts – this filter minimizes external bandspreading while maximizing the filtration capacity.

01090-68702

HPLC In-Line Filters

Description	Frit Porosity (µm)	Frit Inlet ID (mm)	Flow Rate	Part No.	Replacement Frits
RRLC In-line filter 4.6 mm, 0.2 µm pore size filter, connecting capillary, max 600 bar	0.2	4.6	max 600 bar	5067-1553	5067-1562, 10/pk
RRLC In-line filter 2.1 mm, 0.2 µm pore size filter, connecting capillary, max 600 bar	0.2	2.1	max 600 bar	5067-1551	5067-1555, 10/pk
Low dispersion in-line filter Includes two frits, 1.6 mm, 2 µm pore size; filter holder with inserts; 60 x 0.12 mm connecting capillary	2 0.5	1.6	< 1 mL/min	01090-68702	280959-904, 10/pk 280959-907, 10/pk
Universal in-line filter Includes two frits, 4.8 mm, 2 µm pore size; filter holder with inserts; 130 x 0.25 mm connecting capillary	2	4.8	1-5 mL/min	01090-68703	01090-27609, 2/pk
Semi Prep Filter	0.5	12.7	1-5 mL/min	5064-8273	5022-2185
Semi Prep Filter	10	19	5-10 mL/min	5022-2165	5022-2166, 10/pk
Prep Filter	10		10-100 mL/min	5065-4500	5065-9901 Replacement Glass Cartridge
In-line filter for G1311A	Recommended when high salt concentrations are used			G1311-60006	

Vacuum Degassers

G1322A 1100 Series Vacuum Degasser

Description	Part No.
Online degasser accessory kit Includes 8 screws, 8 bushings, 4 markers, tubing, syringe, syringe adapter	G1322-68705
Glass filter, solvent inlet, 20 µm	5041-2168
Disposable syringes, 20 mL	5062-8534
Syringe Adapter, 1/16 in. OD, 2 in. long	9301-1337
Tefzel Ferrules and SS Lock Rings, 1/8 in.	5063-6598
PPS nuts, 1/8 in., 1/4 - 28 thread	5063-6599
Union, 1/4 - 28 threads, Polypropylene	5022-2155
Teflon Solvent tubing	5062-2483
Tubing kit, degasser to pump 4/pk, 30 cm pieces of tubing with screws and bushings	G1322-67300
Mounting tool for flangeless nut	0100-1710
Plastic tubing cutter	8710-1930

5063-6598

5063-6599

G1379A/B 1100/1200 Series Micro Vacuum Degasser

Description	Part No.
Dual channel micro degasser vacuum chamber	G1379-60010
Micro vacuum degasser tubing kit for G1379A	G1379-67310
Micro vacuum degasser tubing kit for G1379B	5042-8922
Mounting tool for flangeless nut	0100-1710

0100-1710

Tips & Tools

To clean the vacuum degasser, flush the system with isopropanol. After using buffers, flush the degasser with water.

Detector Maintenance

Ensure uncompromised chromatographic performance with these tips and techniques.

Agilent wavelength detectors combine exceptional flexibility with superior instrument control, data communication, and analytical capabilities. And this section will show you how to maintain your detector's high level of selectivity and sensitivity by performing the following procedures:

- Choosing the most compatible flow cell for your application.
- Disassembling, cleaning, and installing the flow cell.
- Changing the deuterium lamp.

Of course, you will also find the precision-engineered Agilent parts you need to get the job done quickly and keep your downtime to a minimum.

Variable Wavelength Detector

It is critical to verify the function of the VWD on a regular basis. There are two built-in tests to help you accomplish this:

- The wavelength calibration test.
- The lamp intensity test. If the lamp intensity has diminished more than is tolerable for your application, you will need to replace the lamp.

Additionally, you should perform the following routine maintenance procedures:

- Check the waste outlet.
- Clean the leak sensor.
- Check the photocurrent.
- Clean or replace the flow cell windows when they become dirty.

Tips & Tools

A vital parameter of the VWD is backpressure on the cell. Make certain that you use the appropriate capillary from the detector flow cell to the waste accessory. Part number: 5062-8535

Replacement Parts

Description	Part No.
G1314A VW detector accessory kit Includes 1/4 in. waste tubing, 2 hex keys, 2 wrenches, outlet tubing, 1/16 in. PEEK male fitting	G1314-68705
Deuterium lamp (1000 hours)	G1314-60100
Deuterium longlife lamp*	2140-0813
VWD inlet tubing with fitting, 0.18 x 40 mm, PEEK	5062-8522
VWD outlet tubing with fitting, 0.25 x 48 mm, PEEK	5062-8535

**Check manual for proper setting of detector*

Flow cell

Choosing the Optimal Flow Cell For Your Variable Wavelength Detector

Agilent offers four flow cell options for the VWD. Use the chart below to select the appropriate one for your application, keeping the following guidelines in mind:

- If more than one selection is appropriate, choose the larger flow cell to get the best detection limit.
- For columns capable of providing narrower peak widths (1.8 µm particle size), the smaller flow cell may be more appropriate.
- Flow cells with longer path lengths provide better signal detection. However, a longer path length also increases the cell volume, which causes more peak dispersion.

Agilent offers four flow cell options for the VWD. Use the chart below to select the appropriate one for your application, keeping the following guidelines in mind:

VWD Flow Cell Selection

Typical Column Length (cm)	Typical Peak Width	Recommended Flow Cell				
< = 5	0.025	Micro Flow Cell			138	
10	0.05	0.05 - 0.2 mL/min	Semi-micro Flow Cell		60	High Pressure Flow Cell For Pressure Above 100 bar
20	0.1			Standard Flow Cell		
> = 40	0.2				168	
Typical Flow Rate		0.05 - 0.2 mL/min	0.2 - 0.4 mL/min	0.4 - 0.8 mL/min	1 - 2 mL/min	0.05 - 5 mL/min
Internal Column Diameter		1.0 mm	2.1 mm	3.0 mm	4.6 mm	

Disassembling and cleaning the cell

How to remove the cell:

1. Remove both capillaries from the flow cell.
2. Unscrew the cell screws and remove the flow cell.

How to disassemble the cell windows:

1. Open the cell with a 4 mm hexagonal key.
2. Use tweezers to remove the conical springs and gaskets.
3. Remove the cell windows with scotch tape. Important: Do not remove the flow cell windows with tweezers if you plan to reuse them. The tweezers will scratch the windows' fragile surface.
4. Use ethanol to clean the cell body.
5. Use a cotton swab and ethanol to clean the cell windows. Note: if you work with proteins, you may want to try a contact lens cleaner. Or, simply replace the windows.
6. Make sure that no deposits are on the window or cell body.

Reassembling the cell windows and cell

1. Insert Gasket #2. Note: The hole of gasket #2 is larger than the hole of gasket #1.
2. Install the cell window.
3. Insert Gasket #1.
4. Insert the SST ring.
5. Install the conical springs. Note: Install the conical springs with the conical side toward the cell window. This will ensure correct placement of the conical springs, which is critical to proper tightness.
6. Carefully tighten the cell screw.

The cell repair kit includes the required cell windows (pack of 2) and gaskets.

Installing the Detector Cell

Before you return the flow cell to the instrument module:

1. Connect the capillaries.
2. Switch on the pump and check the cell for leaks.

Once you are convinced the cell is leak free:

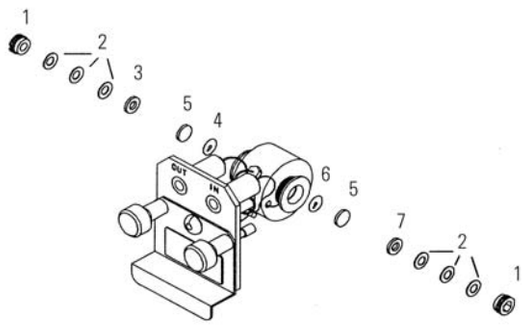
3. Install the flow cell into the instrument.
4. Screw down the cell.

We recommend the following tests after cell installation:

- Zero-order calibration
- Wavelength calibration

Because the flow cell is part of the optical system and has now been moved since these tests were last performed, we recommend running them again before your next analysis.

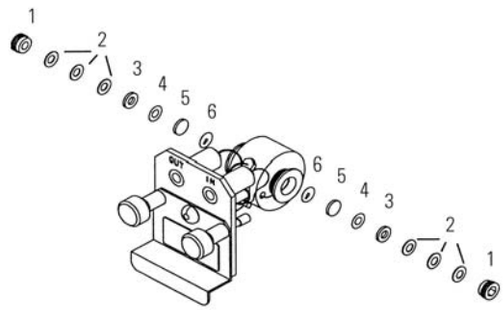
There are two designs of the Standard Flow Cell. The cell screw of the new design, G1314-60086, is painted black.



G1314-60086 Standard Flow Cell Replacement Parts

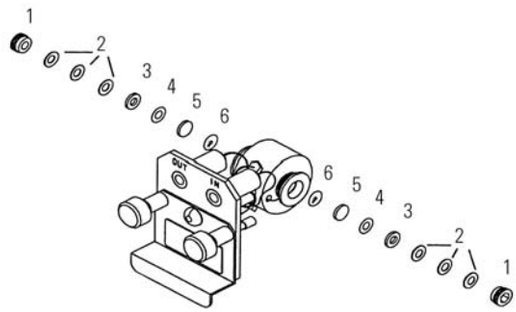
Item	Description	Unit	Part No.
	Standard "D" type flow cell, 10 mm, 14 µL, 40 bar		G1314-60086
	Standard "D" flow cell kit Includes 2 windows, 2 gaskets #1, 2 gaskets #2		G1314-65061
1	Cell screws*	2/pk	G1314-65062
2	Conical spring, "D" version	10/pk	79853-29100
3	Ring #1, PEEK	2/pk	G1314-65065
4	Gaskets #1, Kapton	10/pk	G1314-65063
5	Quartz windows, "D" version	2/pk	79853-68742
6	Gaskets #2, Kapton	10/pk	G1314-65064
7	Ring #2, PEEK	2/pk	G1314-65066

**The cell screw of P/N G1314-60086 is painted black to differentiate flow cell types.*



G1314-60080 Standard Flow Cell Replacement Parts (old design)

Item	Description	Unit	Part No.
	Standard "D" flow cell kit Includes 2 windows, 2 gaskets #1, 2 gaskets #2		G1314-65050
1	Cell screw		79853-27200
2	Conical spring, "D" version	10/pk	79853-29100
3	Ring, stainless steel, "D" version	2/pk	79853-22500
4	Gasket #1, PTFE, "D" version	10/pk	79853-68743
5	Quartz windows, "D" version	2/pk	79853-68742
6	Gasket #2, PTFE	10/pk	G1314-65051

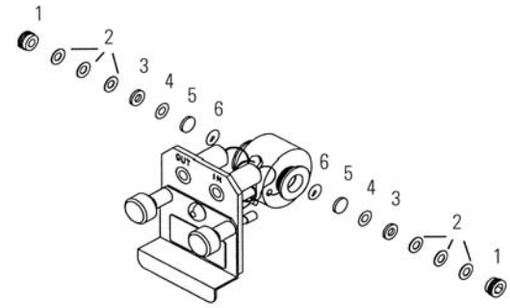


G1314-60083 Semi-micro Flow Cell Replacement Parts

Item	Description	Unit	Part No.
	Semi-micro flow cell assembly 6 mm, 5 µL, 40 bar		G1314-60083
	Semi-micro flow cell kit Includes 2 windows, 4 gaskets: 2 standard #1, 1 semi-micro #1, 1 semi-micro #2		G1314-65056
1	Cell screw		79853-27200
2	Conical spring, "D" version	10/pk	79853-29100
3	Ring, stainless steel, "D" version	2/pk	79853-22500
4	Quartz windows, "D" version	2/pk	79853-68742

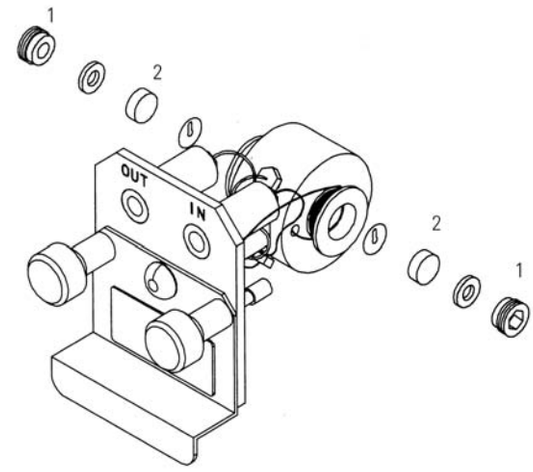
G1314-60081 Micro Flow Cell Replacement Parts

Item	Description	Unit	Part No.
	Micro flow cell, 3 mm, 2 µL, 120 bar, for use with 1200 SL		G1314-60087
	Micro flow cell, 5 mm, 1 µL, 40 bar		G1314-60081
	Micro flow cell kit Includes 2 windows, 2 gaskets #1, 2 gaskets #2		G1314-65052
1	Cell screw		79853-27200
2	Conical spring, "D" version	10/pk	79853-29100
3	Ring, stainless steel, "D" version	2/pk	79853-22500
4	Quartz windows, "D" version	2/pk	79853-68742
5	Gasket #1, PTFE, "D" version	10/pk	79853-68743
6	Gasket #2, PTFE	10/pk	G1314-65053



G1314-60082 High Pressure Flow Cell Replacement Parts

Item	Description	Part No.
	High pressure flow cell, 10 mm, 14 µL, 400 bar	G1314-60082
	High pressure flow cell kit Includes 2 windows, 2 Kapton gaskets, 2 PEEK rings	G1314-65054
1	Cell screw	79853-27200
2	Window, UHP, 2/pk	79853-68734



Diode Array Detector (DAD), Multiple Wavelength Detector (MWD)

Diode Array Detector (DAD)

DAD Routine Maintenance Procedures:

- Perform the intensity test and detector cell test. These built-in tests will help you verify the performance of your detector, and determine when maintenance is necessary.
- Clean or replace the flow cell windows as needed.
- Perform a wavelength calibration to ensure wavelength accuracy.
- Clean the leak sensors and check their function.
- Inspect the positioning of the waste tube.
- Exchange the lamp.
- Perform a dark current and filter test.

Flow Cell Maintenance Tips

Step 1: Remove the capillaries.

Step 2: Take out the cell.

Step 3: Remove the cell screw and gasket.

Flow cell

Choosing the Optimal Flow Cell

Agilent offers eight flow cells for use with the diode array and multiple wavelength detectors. Use the chart below to select the appropriate one for your application, keeping the following guidelines in mind:

- If more than one selection is appropriate, choose the larger flow cell to get the best detection limit.
- For columns capable of providing narrower peak widths (1.8 µm particle size), the smaller flow cell may be more appropriate.
- Flow cells with longer path lengths provide better signal detection. However, a longer path length also increases the cell volume, which causes more peak dispersion.
- For information on selecting prep cells, please refer to our technical note G1315-90102 under Library Information at www.agilent.com/chem

DAD/MWD Flow Cell Selection

Typical Column Length (cm)	Typical Peak Width	Recommended Flow Cell				
	0.025	80/500 nL Flow Cell				High Pressure Flow Cell
10	0.05		Semimicro Flow Cell			
20	0.1			Standard Flow Cell		
> = 40	0.2					
Typical Flow Rate		0.05 - 0.2 mL/min	0.2 - 0.4 mL/min	0.4 - 0.8 mL/min	1 - 2 mL/min	0.05 - 5 mL/min
Internal Column Diameter		0.3 - 1 mm	2.1 mm	3.0 mm	4.6 mm	

Agilent's DAD lamp can help you achieve optimal performance with these innovative features:

- A lifetime of over 2000 hours.
- Precise alignment.
- Thermal stability.
- Easier handling during installation and removal.

Changing the Deuterium Lamp

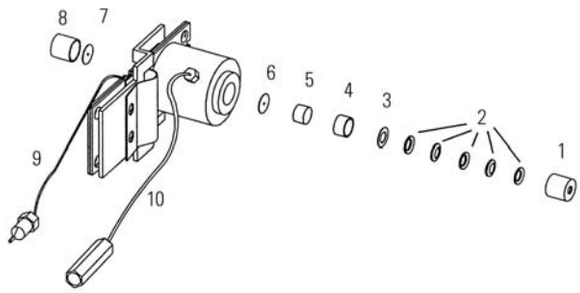
You should replace the deuterium lamp when the baseline noise and/or drift exceed your application limits – or if the lamp does not light. Use the following procedure:

1. If the detector has been in use, turn it off and allow it to cool before proceeding.
2. Remove the front cover.
3. Disconnect the electrical connection, and unscrew the lamp to remove it from the DAD.
4. Replace with a new lamp, taking care not to touch the glass surface with your hands.
5. Tighten the screws and reconnect the lamp to its electrical connection.
6. Replace the front cover.
7. Reset the lamp counter and turn on the lamp. Allow it to warm up for 10 – 20 minutes. Note: The new 'C' type detectors use lamps with a chip installed to automatically count used lamp time.

Deuterium lamp

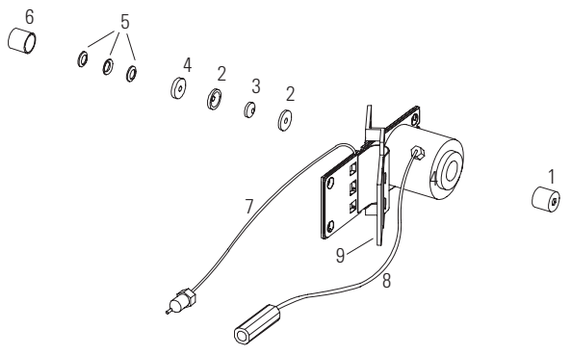
Replacement Parts

Description	Part No.
Deuterium lamp, 1100 DAD/MWD	2140-0590
Deuterium lamp, 1100 DAD/MWD, long life	2140-0813
Deuterium lamp, 1100 DAD/MWD, long life, with ID tag For G1315C DAD and G1365C MWD	2140-0820
Deuterium lamp, 1100 DAD/MWD longlife For G1315A/B DAD and G1365A/B MWD	5181-1530
Tungsten lamp assembly For G1315A/B DAD and G1365A/B MWD	G1103-60001
Universal ZDV union, stainless steel, no fittings, Capillary/Nano/Standard LC	5022-2184
Holmium Oxide filter	79880-22711
Lever for Holmium Oxide Filter	G1315-45001
Column connecting capillary with fittings, 380 x 0.17 mm	G1315-87311
Column connecting capillary with fittings, 150 x 0.12 mm	G1315-87312
Column connecting capillary with fittings, 150 x 0.17 mm	G1315-87303



G1315-60011 Semi-Micro Flow Cell and Replacement Parts

Item	Description	Part No.
	Semi-micro flow cell, 6 mm, 5 µL, 120 bar	G1315-60011
	Semi-micro flow cell with ID tag, 6 mm, 5 µL, 120 bar	G1315-60025
	Micro flow cell with ID tag, 3 mm, 2 µL, 120 bar	G1315-60024
	Window assembly (includes items 1 through 5)	79883-68703
1	Window screw	79883-22402
2	Spring washers, 10/pk	5062-8553
3	Compression washer	79883-28801
4	Window holder	79883-22301
5	Quartz window	1000-0488
6	Seal BACK, 12/pk	79883-68702
7	Seal FRONT, 12/pk	G1315-68710
8	Inlet capillary with heat exchanger, 0.12 mm ID, 290 mm long for G1315-60011	G1315-87325
9	Outlet capillary, 0.12 mm ID, 200 mm long	G1315-87306
	Outlet capillary, 0.17 mm ID, 200 mm long	G1315-87302
10	Clamp unit	G1315-84901
	Screw M 2.5, 4 mm long for cell body/clamp	0515-1056
	Cell repair kit, semi-micro Includes window screw kit, 4 mm hexagonal wrench and seal kits	G1315-68713



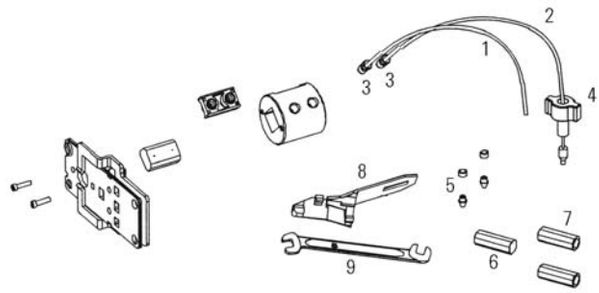
G1315-60015 Micro High-Pressure Flow Cell and Replacement Parts

Item	Description	Part No.
	Micro high-pressure flow cell, 6 mm, 1.7 µL, 400 bar	G1315-60015
1	Window assembly (includes items 2 through 6)	79883-68703
2	Seal ring	79883-27101
3	Quartz window, high pressure	1000-0953
4	Compression washer, high pressure	79883-28802
5	Spring washers, 10/pk	5062-8553
6	Window screw	79883-22404
7	Inlet capillary with heat exchanger, 0.12 mm ID, 290 mm long for G1315-60011	G1315-87325
8	Outlet capillary, 0.12 mm ID, 200 mm long	G1315-87306
9	Clamp unit	G1315-84901
	Screw M 2.5, 4 mm long for cell body/clamp	0515-1056
	Column connecting capillary with fittings, 150 x 0.12 mm	G1315-87312
	Column connecting capillary with fittings, 380 x 0.17 mm	G1315-87311
	High pressure cell repair kit Includes 1 quartz window, 5 spring washers, 2 seal rings	79883-68700

DAD/MWD Nano Flow Cells

Nano Flow Cell Replacement Parts

Item	Description	Unit	Part No.
	500 nL Flow Cell Contains quartz flow cell with 10 mm path length and 500 nL volume, connecting capillaries, max 50 bar pressure		G1315-68724
	80 nL Flow Cell Contains quartz flow cell with 6 mm path length and 80 nL volume, connecting capillaries, max 50 bar pressure		G1315-68716
1	Fused silica/PEEK capillary, 40 cm long, 50 µm ID		G1315-68703
2	Fused silica/PEEK capillary, 70 cm long, 75 µm ID		G1315-68708
3	Fitting screw	10/pk	5063-6593
4	Double winged nuts and 1/32 in. ferrules	10/pk	5065-4422
5	1/32 in. ferrule and SS lock ring, lite touch	10/pk	5063-6592
6	Union Adjustment Tool	2/pk	5022-2146
7	Universal ZDV union, stainless steel, no fittings	2/pk	5022-2184
8	Torque Wrench Adapter		G1315-45003
9	Open end wrench, 4 mm		8710-1534



500 nL flow cell and replacement parts

Parts for the G1315-68724 500 nL Flow Cell

Description	Part No.
Fused silica/PEEK capillary, 100 µm ID, 30 cm long, Inlet	G1315-87333
Fused silica/PEEK capillary, 50 µm ID, 40 cm long, Inlet	G1315-87323
Fused silica/PEEK capillary, 100 µm ID, 12 cm long, Outlet	G1315-87338
Fused silica/PEEK capillary, 50 µm ID, 12 cm long, Outlet	G1315-87328
Sealing kit Includes torque adapter, 2 cell seal assemblies, 5 litetouch front and back ferrules	G1315-68715

Parts for the G1315-68716 80 nL Flow Cell

Description	Part No.
Fused silica/PEEK capillary, 50 µm ID, 40 cm long, Inlet	G1315-87323
Fused silica/PEEK capillary, 50 µm ID, 12 cm long, Outlet	G1315-87328
Fused silica/PEEK capillary, 25 µm ID, 20 cm long, Inlet	G1315-87313
Fused silica/PEEK capillary, 25 µm ID, 60 cm long, Outlet	G1315-87318
Sealing kit for 80 nL flow cell Includes torque adapter, 2 cell seal assemblies, 5 litetouch front and back ferrules, 5 sleeves for 360 µm OD capillaries	G1315-68725

G1315-60017/18 Preparative Flow Cells and Replacement Parts

Description	Part No.
Prep Flow Cell Quartz, 0.3 mm, 20 bar	G1315-60017
Prep Flow Cell Quartz, 0.06 mm, 20 bar	G1315-60018
PTFE tubing, 0.8 mm ID, 2 m	G1315-67301
PTFE tubing, 0.5 mm ID, 0.8 m	G1315-67302
Cell housing	G1315-27705
Quartz body, 0.3 mm	G1315-80004
Quartz body, 0.06 mm	G1315-80003
Prep Flow Cell SS, 3 mm, 120 bar	G1315-60016
Stainless steel connecting capillary, 0.5 mm, 250 mm	G1315-87305

Maintaining the MSD

Agilent is a world-wide leader in mass spectrometry, with powerful, reliable LC MSD solutions. Agilent mass spectrometers work seamlessly with our industry-leading LC separation technologies and columns to provide exceptional sensitivity, analytical performance, and reliability.

Simple Repairs

Procedure	When to Perform
Flush the nebulizer	Daily or at the end of each shift to flush traces of samples and buffers out of the tubing, valves, and nebulizer.
Clean the electrospray spray chamber	Daily or anytime you suspect carryover contamination from one sample or analysis to another.
Replace the electrospray nebulizer needle	When the needle is plugged. Common symptoms of a plugged needle are increased LC back pressure, off-axis spraying, or dripping from the nebulizer.
Clean the APCI spray chamber	Daily or anytime you suspect carryover contamination from one sample or analysis to another.
Replace the APCI nebulizer needle	When the needle is plugged. Common symptoms of a plugged needle are increased LC back pressure or off-axis spray from the nebulizer.
Clean the Multimode source	Daily or anytime you suspect carryover contamination from one sample or analysis to another, or when you must access the end cap and capillary cap for cleaning and inspection.
Check calibrant levels	Monthly, or weekly if you tune the LC/MS frequently.

LC MSD Supplies

Description	Part No.	LC MSD Quad	LC MSD Trap	LC MSD TOF & Q-TOF
ES nebulizer assembly, Used for analytical sprayer	G1946-60098	◆	◆	◆
API-ES nebulizer needle	G2427A	◆	◆	◆
APCI nebulizer assembly	G1946-60037	◆	◆	◆
APCI nebulizer needle	G2428A	◆	◆	◆
Needle assembly	G1947-60103	◆	◆	◆
Corona Needle APCI	G1947-20029	◆	◆	◆

6510 Quadrupole Time-of-Flight LC/MS

6410 Triple Quadrupole LC/MS

6300 Series Ion Trap LC/MS

6210 Time-of-Flight LC/MS

LC MSD Supplies

Description	Part No.	LC MSD Quad	LC MSD Trap	LC MSD TOF & Q-TOF
Capillary cap (G1946A/B/C)	G1946-20056	◆		
Capillary cap (G1946D and G1956A/B)	G1946-20301	◆	◆	◆
Capillary (G1946A/B/C and G1956A)	G1946-80009	◆	◆	
Capillary (G1946D, G1956B)	59987-20040	◆	◆	◆
Spring canted coil, 0.25 in. ID, 0.53 mm	1460-2571	◆	◆	◆
1/6 in. tee, low dead volume, stainless steel	0100-0969			◆
Syringe adapter	9301-1291		◆	
Syringe pump	3162-0178		◆	
1/16 in. finger-tight PEEK fittings, beige	0100-1516		◆	◆
Female luer to female 10/32 adapter	0100-2304		◆	◆
PEEK tubing	0890-1915		◆	◆
Gas-tight syringe, Teflon luer lock	5182-9710		◆	◆
High throughput skimmer, 2 mm	G1969-20302			◆
Skimmer 1 (G1946A/B/C)	G1946-20089	◆		
Skimmer 1 (G1946D)	G1946-20302	◆		
Skimmer 1 (G1956A/B)	G1956-20302	◆		
Skimmer 2 (G1946A/B/C and G1956A Only)	G1946-20087	◆		
HED Electron Multiplier (G1946A/B/C/D)	G1946-80019	◆		
Detector assembly (G1956A/B)	G1956-80000	◆		
Electron multiplier replacement horn	05971-80103	◆		
Replacement horn and dynode	G2441-80010		◆	
Delay calibrant	G1946-85020	◆		
ESI Tuning Mix, 100 mL	G2421A	◆		

LC MSD Chemical Supplies

Description	Part No.
LC MSD Quad Supplies	
ESI Tuning Mix, 100 mL	G2421A
APCI/APPI calibrant solution, 100 mL	G2432A
ES Negative Ion Performance Standard, 5 x 1 mL ampoules	G2424A
Delay Calibrant	G1946-85020
LC MSD Trap Supplies	
ESI Tuning Mix for Ion Trap, 100 mL	G2431A
APCI/APPI calibrant solution, 100 mL	G2432A
LC MSD TOF & Q-TOF Supplies	
ES-TOF tuning mix, 100 mL	G1969-85000
APCI-L Low Concentration Tuning Mix, 100 mL	G1969-85010
MMI-L Low Concentration Tuning Mix, 100 mL	G1969-85020
ES-TOF reference mix, 6 x 2 mL ampoules	G1969-85001
ES-TOF Biopolymer reference standard kit	G1969-85003
LC MSD Common Chemical Supplies*	
Flushing solvent	G1969-85026
High purity water, 4 L	8500-2236
Methyl alcohol, 1 L	8500-1867
Acetonitrile, 1 L	G2453-85050
Formic acid, 5 mL	G2453-85060
Ammonium formate	G1946-85021
ES/APCI positive ion performance standard, 5 x 1 mL ampoules	G2423A

**These parts are common to all LC MSD systems*

LC MSD Common Supplies*

Description	Part No.
Common Parts	
Filter element, 5 µm, box of 5	0100-2051
Rotor seal, Tefzel, pH 0 to 14	0100-1854
Rotor seal, Vespel, pH 0 to 10	0100-1855
Inlet filter assembly	G1946-60180
SSV long drain tubing assembly	G1969-60086
Cleaning Supplies	
Abrasive mesh, 4000 grit	8660-0827
Capillary cleaning wire for dip tube	G1946-80054
Cloths, lint free	05980-60051
Cotton swabs, 100/pk	5080-5400
Gas Purifiers and Generators	
Big hydrocarbon trap, 1/4 in. fittings	BHT-4
Big universal trap, 1/8 in. fittings, nitrogen	RMSN-2
Nitrogen gas generator	5183-2003
Nitrogen gas generator with oxygen monitor, 120/220V	5183-2004
Maintenance kit for LC MSD nitrogen generator	5183-2014
Pump Supplies	
Oil mist filter kit for E2M18	3162-1056
Oil return kit	3162-1057
Rotary pump oil, 4 L	6040-0798
Rotary pump oil, 1 L	6040-0834
Tools	
G1946A tool kit	G1946-60157
3 mm wrench for nebulizer needle adjustment	8710-2699
Nebulizer adjustment fixture	G1946-20215
Nebulizer 25X magnifier	G1946-80049
Plastic tubing cutter	8710-1930

**These parts are common to all LC MSD systems*

Quiet Cover

Agilent has a solution to the frequent maintenance and inherent noise of LC/MS rough pumps. The Quiet Cover II was designed for easy movement, maintenance, and better living with rough pumps used with Agilent and other LC/MS systems.

- Locking castors to move heavy pump for maintenance.
- No tools necessary to remove sectioned cover for easy access to pump.
- Built in Lift and Tilt lever raises end of pump to drain oil.
- Removable drip pan with well and hand holds to collect and transport oil.
- Sound absorbing cabinet with resistant foam insulation to reduce pump noise.
- Pump mounted on cushioned grommets to minimize vibration.
- 2 Integrated fans maintain temperature inside cover.
- LEDs and audible alarm if temperature exceeds 35°C limit.
- Maximum ambient temperature of 35° when airflow is neither restricted nor recycled.
- Standard one-year warranty. Installation and familiarization included with new LC/MS orders.

Quiet Cover

The Quiet Cover II is compatible with these Agilent LC/MS systems:

- 6100 Single Quads: G6110AA, G6120AA, G6130AA, G6140AA
- 6300 Traps: G2440DA, G2451AA, G4533AA, G2474SS
- 6410 QQQ: G6410AA
- 6210 TOF: G3250AA, G3252A
- 6510AA Q-TOF: G6510AA

Or any analytical system using BOC Edwards pumps (lbs/kg): E2M28, E2M18, E1M18.

Description	Part No.
Quiet Cover II for Agilent LC/MS Systems 12.5 W x 17.3 H x 33.5 L	G3199B

General Supplies

They may be small, but they have a BIG effect on your productivity and results.

Vials, caps, and other accessories are the least expensive components of your LC System; however, they can contribute to problems such as injector damage, ghost peaks, and analyte degradation.

That is why Agilent supplies are engineered with the same reliability and reproducibility you expect from Agilent instruments. And they are precisely designed to work with your 1100 or 1200 Series HPLC System.

The following pages feature a wide selection of Agilent-engineered supplies, including:

- Membrane syringe filters
- LC tubing
- Connecting capillaries
- Certified vials and caps
- Electronic crimpers and decappers

These supplies are also designed for fast, easy replacement, so you can get your system running again quickly.

Ready-to-Use Econofilter Membrane Syringe Filters

Agilent's industry-standard 25 mm diameter Econofilters are an ideal choice for high sample throughput laboratories. We recommend using them to clarify small-volume HPLC samples that need further analysis – or when particulate matter in the sample solution may cause problems.

Features include...

- The same quality membranes found in Agilent's high-performance syringe filters.
- An inert polymeric housing that helps to spread the sample over the membrane's entire surface, so that the maximum capacity is reached.
- No glue or binders used during construction, which ensures that no extractables are present.
- Built-in simplicity – just attach the Luer-tipped syringe (filled with the sample solution) to the housing, and push the sample through the pre-cleaned filters.

Syringe Econofilters, 5185-5830

Econofilters have a moderately wide cross sectional area (4.2 cm^2) with a holdup volume of less than 50 microliters. Popular pore sizes of 0.20 and 0.45 micron are available in packages of 200 units. Regenerated cellulose, nylon and PTFE (polytetrafluoroethylene) membranes are also available in these configurations.

Membrane Econofilters, 200/pk

Description	Diameter (mm)	Pore Size (µm)	Part No.
Regenerated Cellulose	25	0.2	5185-5830
Regenerated Cellulose	25	0.45	5185-5831
Nylon	25	0.2	5185-5832
Nylon	25	0.45	5185-5833
PTFE	25	0.2	5185-5834
PTFE	25	0.45	5185-5835

PEEK tubing

LC Tubing and Fittings

What is the Function of LC tubing?

LC tubing creates the sample flow path through your LC system – from the autosampler or manual injection valve, through the column, to the detector. The ideal tubing provides an inert surface, leak-free connections, and zero dead volumes.

What advantages does Agilent tubing offer?

Agilent stainless steel and PEEK tubing each provide their own unique benefits:

- Stainless Steel Tubing – is precisely measured and pre-cut according to Agilent's exact specifications, and is available in universal lengths. Additionally, Agilent capillary tubing is color-coded based on internal diameters.
- 1/16 in. OD PEEK Tubing – is flexible and easy to cut to desired lengths. It's also color-coded for easy tracking. Additionally, PEEK tubing accepts both stainless steel and PEEK fittings.

When should I replace the LC tubing?

You should inspect your system periodically, and replace the tubing when you notice the following:

- Leaking or loose fittings
- Pinched or constricted tubing
- Application changes

How can I minimize problems with my LC tubing?

- Choose the narrowest diameter and shortest length that your application and system will allow. This will help prevent peak dispersion or resolution loss.
- Select smaller ID tubing (0.12 mm) for narrowbore or microbore applications.
- Use color-coded tubing or ChromTrac identifiers to facilitate maintenance and troubleshooting.

How do I choose the correct fittings?

To ensure leak-free connections – and to prevent the loss of peak shape and resolution – always use the manufacturer's recommended fitting style with columns, valves, and unions. For example:

- Different columns have different fitting requirements (ZORBAX columns use standard Swagelok fittings).
- Agilent 1100/1200 modules use standard Swagelok fittings.
- Rheodyne injection valves require Rheodyne fittings.

8710-1930

PEEK Tubing

Length (m)	ID (mm)	Color Code	Part No.
1.5	0.50	Orange	0890-1761
1.5	0.25	Blue	0890-1762
5	0.25	Blue	5042-6463
1.5	0.18	Yellow	0890-1763
5	0.18	Yellow	5042-6462
1.5	0.13	Red	0890-1915
5	0.13	Red	5042-6461

Other Tubing

Description	Length (m)	ID (mm)	OD (mm)	Part No.
Teflon tubing, FEP, primary use for valve solutions	5	0.7	1.6	5062-2462
Teflon Solvent tubing, primary use for flow path from solvent bottle to degasser, to pump	5	1.5	3.1	5062-2483
Corrugated tubing, polypropylene	5	6.5		5062-2463
Silicone Tubing, 1 mm ID, 3 mm OD, 5 m	5	1	3	5065-9978
Clamps and micro clamps, 10/pk				5065-9976
Barbed Y-Connector PP for 3/16 in. ID tube, 10/pk				5065-9971

Accessories

Description	Part No.
Plastic tubing cutter	8710-1930
Blades for plastic tubing cutter, 5/pk	8710-1931

5062-2418

5063-6591

5062-8541

5042-6500

0100-1631

Fittings for 1/16 in. OD Capillaries

Description	Part No.
1/16 in. stainless steel fittings, front and back ferrules, 10/pk	5062-2418
1/16 in. stainless steel long fittings, front and back ferrules, 10/pk	5065-4454
1/16 in. extra long stainless steel fittings and ferrules, 10/pk	5065-9967
1/16 in. male fittings, stainless steel, 10/pk	5061-3303
1/16 in. front ferrule, stainless steel, 10/pk	5180-4108
1/16 in. back ferrule, stainless steel, 10/pk	5180-4114
1/16 in. finger-tight polyketone fittings, max pressure 600 bar, 10/pk	5042-8957
1/16 in. finger-tight PEEK fittings, beige, 10/pk	5063-6591
1/16 in. finger-tight PEEK fittings, beige, 2/pk	0100-1516
1/16 in. finger-tight PEEK long fittings, beige, 10/pk	5062-8541
1/16 in. finger-tight PEEK fittings, 10/pk 2 each: yellow, blue, black, green, red	5065-4426
1/16 in. double winged 2 piece fitting	5042-6500
PEEK RheFlex 2-piece fittings, 5/pk	0100-1631
PEEK RheFlex 2-piece fittings, colored, 10/pk	0100-2175
ChromTrac identifiers, 20/pk 2 each: black, green, white. 4 each: yellow, blue, red	0350-1402
1/16 in. blanking nut, stainless steel	01080-83202
Stainless steel hex nut fitting, PEEK ferrule, max 600 bar, 6/pk	5067-1540
1/16 in. PEEK ferrule, max 600 bar, 6/pk, for use with 5067-1540 fitting	5067-1547
1/16 in. plastic fitting (plug)	0100-1259
0.8 mm ID stainless steel ferrules, 6/pk	5067-1557
0.8 mm ID stainless steel fittings, M4/4 mm, 6/pk	5067-1558

Unions

Description	Use With	Part No.
True ZDV Union, no fittings	Nano LC	5022-2145
Universal ZDV union, stainless steel, no fittings	Capillary/Nano/Standard LC	5022-2184
ZDV union, with fittings	Standard LC	0100-0900
ZDV union, PEEK with fittings	Bio applications	0100-2441
High flow union, no fittings	Prep LC	5022-2133
PEEK adapter 1/4-28 to 10-32		0100-1847
Adapter, PEEK int. 1/4-28 to ext. 10-32		0100-2298
Barbed Y-Connector PP for 3/16 in. ID tube, 10/pk		5065-9971
Adapter, female to female 1/4-28		5042-8517
Adapter, male luer to female 1/4-28		5042-8518
Micro T-connector, PEEK, swept vol 29 nL, with 1/32 in. ID fittings		5042-8519

0100-0900

5022-2133

LC Connecting Capillaries

Universal Connection Capillaries

- Made of flexible stainless steel (0.6 mm OD) with 1/16 in. OD tubing at both ends to accept standard fittings.
- Pre-swaged fittings are assembled according to Swagelok specifications.

Universal Connection Capillaries

From	To	ID (mm)	Length (mm)	Material*	Color Code	Fittings	Part No.
Pump	Autosampler	0.17	600	SS	Green	Pre-swaged	G1312-67305
		0.25	130	SS	Blue	Pre-swaged	01090-87308
		0.25	320	SS	Blue	Pre-swaged	79835-87638
		0.17	500	SS	Green	With fittings	G1328-87600
	Manual Valve	0.17	900	SS	Green	Not swaged	G1329-87300
	Universal	0.25	700	SS	Blue	1 end pre-swaged	01018-67305
Autosampler	Column	0.12	180	SS	Red	1 end pre-swaged	G1313-87304
		0.12	280	SS	Red	1 end pre-swaged	01090-87610
		0.12	105	SS	Red	1 end pre-swaged	01090-87611
		0.17	180	SS	Green	1 end pre-swaged	G1313-87305
		0.17	280	SS	Green	1 end pre-swaged	01090-87304
		0.17	800	SS	Green	1 end pre-swaged	01048-87302
		0.17	130	SS	Green	1 end pre-swaged	01090-87305
Manual valve	Column	0.17	500	SS	Green	With fittings	G1328-87600
Column compartment	Column	0.12	70	SS	Red	1 end pre-swaged	G1316-87303
Detector	Waste	0.17	90	SS	Green	With fittings	G1316-87300
Column	DAD	0.12	150	SS	Red	Pre-swaged	G1315-87312
		0.17	380	SS	Green	Pre-swaged	G1315-87311
VWD	Inlet	0.18	40	PEEK		With fittings	5062-8522
		0.12	105	SS	Red	Without fittings	5021-1820
		0.12	150	SS	Red	Without fittings	5021-1821
		0.12	280	SS	Red	Without fittings	5021-1822
		0.12	400	SS	Red	Without fittings	5021-1823
		0.12	70	SS	Red	1 end pre-swaged	G1316-87303
		0.17	105	SS	Green	Without fittings	5021-1816
		0.17	150	SS	Green	Without fittings	5021-1817
		0.17	280	SS	Green	Without fittings	5021-1818
		0.17	400	SS	Green	Without fittings	5021-1819
		0.17	90	SS	Green	With fittings	G1316-87300
VWD	Outlet	0.25	48	PEEK		With fittings	5062-8535

**SS = stainless steel*

Flexible Stainless Steel Capillaries Without Fittings

ID (mm)	Length (mm)	Color Code	Volume (µL)	Part No.
0.12	105	Red	1.2	5021-1820
0.12	150	Red	1.7	5021-1821
0.12	200	Red	2.3	5065-9935
0.12	280	Red	3.2	5021-1822
0.12	400	Red	4.5	5021-1823
0.12	500	Red	5.6	5065-9964
0.17	105	Green	2.4	5021-1816
0.17	150	Green	3.4	5021-1817
0.17	200	Green	4.6	5065-9931
0.17	280	Green	6.4	5021-1818
0.17	400	Green	9.1	5021-1819
0.17	600	Green	13.6	5065-9933
0.17	700	Green	15.9	5065-9932
0.17	900	Green	20.5	5065-9963
0.25	250	Blue	12.3	5065-9979
0.25	280	Blue	13.8	5022-6508
0.25	320	Blue	15.8	5065-9980
0.25	800	Blue	39.3	5065-9930
0.50	105	None	20.6	5065-9927
0.50	150	None	29.5	5022-6509
0.50	280	None	55	5022-6510
0.50	800	None	157	5065-9926

Capillary and Fittings Kits

Description	Part No.
SS Flexible Capillary Tubing Kit Includes 0.12 mm ID capillaries: 3 each 105 mm long, 1 each 150 mm long, 1 each 280 mm long, plus fittings	5061-3304
SS Flexible Capillary Tubing Kit Includes preswaged 0.12 mm ID capillaries: 3 each 70 mm long, 1 each 280 mm long, 1 each 35 mm long	5061-3315

Starter Kits

Agilent starter kits contain the most often used capillaries and fittings. We included our genuine flexible stainless steel capillaries to make the best connection in your LC system, no matter the brand. The kits are for use with 3-4 or 1-2 mm ID columns, as well as for Micro LC columns. The free Cybertool, which contains over 30 tools is useful in every laboratory.

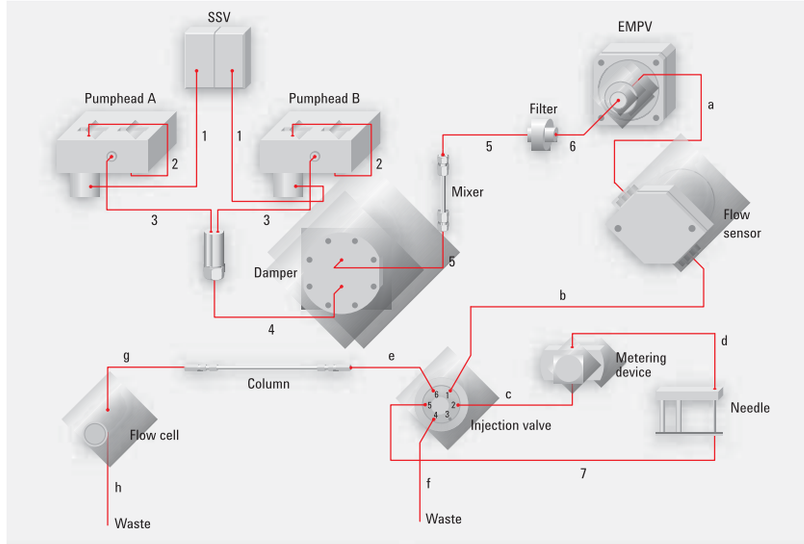
Description	Contents	Part No.
Capillary/fitting starter kit, 0.18 mm ID	Kit includes: Qty 1 - PEEK capillary 0.18 mm ID, 1.5 m Qty 4 - Stainless steel capillary, 105 x 0.17 mm Qty 4 - Stainless steel capillary, 150 x 0.17 mm Qty 2 - Stainless steel capillary, 200 x 0.17 mm Qty 2 - Stainless steel capillary, 280 x 0.17 mm Qty 1 - Stainless steel capillary, 400 x 0.17 mm Tubing cutter for PEEK capillaries 1/16 in. stainless steel fittings, 10/pk 1/16 in. PEEK fittings, color 10/pk 1/16 in. PEEK fittings, 10/pk Qty 3 - ZDV union, stainless steel Rheotool Cybertool	5065-9939
Capillary/fitting starter kit, 0.12 mm ID	Kit includes: PEEK capillary 0.13 mm ID, 1.5 m Qty 4 - Stainless steel capillary, 105 x 0.12 mm Qty 4 - Stainless steel capillary, 150 x 0.12 mm Qty 2 - Stainless steel capillary, 200 x 0.12 mm Qty 2 - Stainless steel capillary, 280 x 0.12 mm Stainless steel capillary, 400 x 0.12 mm Tubing cutter for PEEK capillaries 1/16 in. stainless steel fittings, 10/pk 1/16 in. PEEK fittings, color 10/pk 1/16 in. PEEK fittings, 10/pk Qty 3 - ZDV fitting Rheotool Cybertool	5065-9937
Capillary/fitting starter kit for 1100 Capillary LC System	Kit includes: Qty 2 - Fused silica/PEEK capillary 50 µm, 55 cm Qty 1 - Fused silica/PEEK capillary 50 µm, 20 cm Qty 1 - Fused silica/PEEK capillary 100 µm, 110 cm Qty 2 - Fused silica/PEEK capillary 50 µm, 50 cm Qty 2 - Fused silica/PEEK capillary 50 µm, 40 cm Qty 4 - 4 mm stainless steel fitting, male 10-32 Qty 4 - 1/32 in. PEEK ferrule and stainless steel lock ring Qty 4 - PEEK fittings for µ-valves Qty 4 - Double winged PEEK nuts and 1/32 in. ferrules Qty 1 - Cybertool	5065-9938
Rapid Resolution High Throughput capillary kit	Kit includes: Qty 5 - Capillaries to optimize the 1100 Series LC for use with RRHT columns	5065-9947
1200 capillary kit for 0.12 mm ID	Includes capillaries to optimize 1200 LC for low dispersion operation	G1316-68716

Capillary and fitting starter kit

1200 Rapid Resolution Connection Capillaries

From	To	ID (mm)	Length (mm)	Connection	Fittings	Part No.
Pump	Autosampler	0.17	400	Male to male	Pre-swaged	G1312-87303
	Cooled Autosampler	0.17	700	Male to male	Pre-swaged	G1312-87304
Damper	Pressure sensor	0.17	150	Male to male	Pre-swaged	G1312-87305
Damper Mixer	Mixer Outlet Valve	0.17	105	Male to male	Pre-swaged	G1312-87306
Cell out	MS	0.12	500	Male to male	1 end pre-swaged	G1315-87307
DAD heat exchanger capillary		0.17	310	Male to male	1 end pre-swaged	G1315-87319
DAD heat exchanger capillary		0.12	310	Male to male	1 end pre-swaged	G1315-87339
Valve	Valve	0.12	100	Male to male	Non-swaged	G1316-27301*
Micro Valve	Regeneration Pump	0.12	130	Male to female	Non-swaged	G1316-87304*
WPS	Micro valve	0.12	340	Male to male	1 end pre-swaged	G1316-87305*
Micro valve	Heat exchanger	0.12	75	Male to male	Non-swaged	G1316-87306*
TCC VWD	MS	0.12	500	Male to male	1 end pre-swaged	G1316-87309
Column	DAD cell	0.12	50	Male to female	Non-swaged	G1316-87312
		0.12	70	Male to female	Non-swaged	G1316-87313
		0.12	90	Male to female	Non-swaged	G1316-87314
		0.12	130	Male to female	Non-swaged	G1316-87315
		0.17	150	Male to female	Non-swaged	G1315-87303
WPS	TCC	0.12	170	Male to male	Non-swaged	G1316-87316
		0.12	210	Male to male	Non-swaged	G1316-87317
Cooled WPS	TCC	0.12	300	Male to male	Non-swaged	G1316-87318
		0.12	340	Male to male	Non-swaged	G1316-87319
Column	Cooler (50-150 mm column)	0.17	105	Male to male	Non-swaged	G1316-87321
	Cooler (20-30 mm column)	0.17	170	Male to male	Non-swaged	G1316-87323
Micro valve	Detector	0.12	75	Male to female	Non-swaged	G1316-87326*
Column	DAD cell	0.12	170	Male to female	Non-swaged	G1316-87327

**0.8 mm OD stainless steel capillaries—use 0.8 mm ID fittings*



Generic Connecting Capillaries for Capillary LC System

Item	From	To	Fitting	Part No.
1	SSV	AIV		G1311-67304
2	OBV	Piston 2	A/A	G1312-67300
3	Pump	Restriction capillary	A/A	G1312-67302
4	Mixing capillary	Damper	A/A	G1312-67304
5	Damper	Mixer	A/A	01090-87308
6	Mixer	Filter	A/A	01090-87308
7	Filter	EMPV	A/A	G1375-87400
8	Needle seat	Injection valve	-C	G1329-87101

PEEK Coated Fused Silica Capillaries for use with 20 µL/min Flow Range

Item	From	To	Fitting	ID (µm)	Part No.
a	EMPV	Flowsensor	B/B	50	G1375-87301
b	Flowsensor	Injection valve	B/C	50	G1375-87310
c	Injection valve	Metering device	B/C	50	G1375-87302
d	Metering device	Needle	B/B	100	G1375-87303
e	Injection valve	Column	C/D	50	G1375-87304
f	Injection valve	Waste	C/-	100	G1375-87307
g	Column	Detector	D/E	50	G1315-68703
h	Detector	Waste	E/-	75	G1315-68708
	µ-switching valve	Column	C/D	50	G1375-87309

PEEK Coated Fused Silica Capillaries for use with 100 µL/min Flow Range

Item	From	To	Fitting	ID (µm)	Part No.
a	EMPV	Flowsensor	B/B	100	G1375-87305
b	Flowsensor	Injection valve	B/C	100	G1375-87306
c	Injection valve	Metering device	B/C	100	G1375-87312
d	Metering device	Needle	B/B	100	G1375-87303
e	Injection valve	Column	C/D	75	G1375-87311
f	Injection valve	Waste	C/-	100	G1375-87307
g	Column	Detector	D/E	75	G1375-87308
h	Detector	Waste	E/-	75	G1315-68708
	µ-switching valve	Column	C/D	50	G1375-87309

Replacement Fittings and Ferrules for Capillary and Nano Flow System

Graphic	Description	Type	Part No.
	1/16 in. stainless steel fittings, front and back ferrules, 10/pk	A	5062-2418
	1/16 in. stainless steel fittings, male, 4 mm, 10/pk	B	5063-6593
	1/32 in. ferrule and stainless steel lock ring, 10/pk	B	5065-4423
	6 fittings, 2 plugs, PEEK for µ-valves	C	5065-4410
	Double winged PEEK nuts and 1/32 in. ferrules, 10/pk	D	5065-4422
	PEEK fitting long for 1/32 in. OD capillary	D	5022-6536

PEEK Coated Fused Silica Capillaries for Nano LC

Description	Part No.
25 µm ID, 10 cm long, connecting valve-column	G1375-87320
25 µm ID, 22 cm long, connecting EMPV-flow sensor	G1375-87321
25 µm ID, 35 cm long, connecting flow sensor-injection valve	G1375-87322
25 µm ID, 55 cm long, connecting valve-flow sensor or column	G1375-87323
25 µm ID, 70 cm long, connecting valve-column	G1375-87324
50 µm ID, 10 cm long, connecting valve-column	G1375-87325
75 µm ID, 65 cm long, connecting valve-injector seat or 2nd pump	G1375-87327
Nanoflow LC start-up kit Includes PEEK coated fused silica capillaries, column and fittings to start up a Nanoflow LC system	G2228-68700

Certified Vials, Caps and Septa

Agilent's certified vials are manufactured with the same high-quality design, technical expertise, and exacting specifications that go into every Agilent instrument. Every order of certified vials, caps, and septa comes with a test certificate confirming product specifications.

Certified vials and caps

Certified Vials

- Compatible with Agilent autosamplers.
- Made from first hydrolytical class, borosilicate glass type 1.
- Manufactured in a ISO 9001 certified environment.
- 100% automated computerized video imaging to test critical dimensions, including vial finish, outer diameter, body OD, and length.
- Packed in a clean environment and with packaging especially designed to reduce contamination.
- Compliant with requirements of U.S. and European Pharmacopoeia.

Certified Caps and Septa

- Designed and fabricated for proper sealing and trouble-free operation with Agilent instruments.
- Manufacturing SOPs monitored stringently for consistent quality and full traceability.
- Chromatographic test on silicone septa for purity to eliminate outliers and sample errors.

Screw top vials and caps

Vials

Description	Unit	Part No.
2 mL Wide Opening Screw Top Glass Vials		
Clear	100/pk	5182-0714
Clear	1000/cs	5183-2067
Clear, silanized	100/pk	5183-2070
Clear, write-on spot	100/pk	5182-0715
Clear, write-on spot	1000/cs	5183-2068
Clear, write-on spot, silanized	100/pk	5183-2071
Amber, write-on spot	100/pk	5182-0716
Amber, write-on spot	1000/cs	5183-2069
Amber, write-on spot, silanized	100/pk	5183-2072

Tips & Tools

Experience fewer sequence problems with Agilent Certified vials, caps, and septa. For more information, visit **www.agilent.com/chem/vials**

Vials

Description	Unit	Part No.
2 mL Wide Opening Crimp Top Glass Vials		
Clear	100/pk	5181-3375
Clear	1000/cs	5183-4491
Clear, silanized	1000/cs	5183-4494
Clear, write-on spot	100/pk	5182-0543
Clear, write-on spot	1000/cs	5183-4492
Clear, write-on spot, silanized	100/pk	5183-4495
Amber	100/pk	5181-3376
Amber	1000/cs	5183-4493
Amber, write-on spot, silanized	100/pk	5183-4496
2 mL Wide Opening Snap Top Glass Vials		
Clear	100/pk	5182-0544
Clear	1000/cs	5183-4504
Clear, silanized	100/pk	5183-4507
Clear, write-on spot	100/pk	5182-0546
Clear, write-on spot	1000/cs	5183-4505
Clear, write-on spot, silanized	100/pk	5183-4508
Amber, write-on spot	100/pk	5182-0545
Amber, write-on spot	1000/cs	5183-4506
Amber, write-on spot, silanized	100/pk	5183-4509
Wide Opening Polypropylene Crimp/Snap Top Vials		
Polypropylene, 1 mL	100/pk	5182-0567
Polypropylene, 300 µL	1000/pk	9301-0978

Crimp top vials and caps

Snap top vials and caps

Vials with Fixed Inserts

Description	Unit	Part No.
Screw top glass vial with fixed insert	100/pk	5188-6591
Screw top glass vial with fixed insert, amber	100/pk	5188-6592
Crimp top micro vial with fixed insert	100/pk	9301-1388
Crimp top vial with fixed insert, amber	100/pk	5188-6572
Snap top glass vial with fixed insert	100/pk	5188-6593
Snap top glass vial with fixed insert, amber	100/pk	5188-6594

High recovery vials

High Recovery Glass Vials

Description	Unit	Part No.
Screw top vial, high recovery	100/pk	5183-2030
Screw top vial, high recovery, amber	100/pk	5183-2073
Crimp top vial, high recovery	100/pk	5182-3454
Crimp top vial, high recovery, silanized	100/pk	5183-4497
Snap top vial, high recovery	100/pk	5183-4510

Caps

Description	Unit	Part No.
Polypropylene Wide Opening Screw Caps with Septa		
Blue, PTFE/red silicone rubber septa	100/pk	5182-0717
Green, PTFE/red silicone rubber septa	100/pk	5182-0718
Red, PTFE/red silicone rubber septa	100/pk	5182-0719
Blue, PTFE/silicone septa	100/pk	5182-0720
Green, PTFE/silicone septa	100/pk	5182-0721
Red, PTFE/silicone septa	100/pk	5182-0722
Crimp Caps with 11 mm Septa		
Silver aluminum, clear PTFE/red rubber septa	100/pk	5181-1210
Silver aluminum, clear PTFE/red rubber septa	1000/pk	5183-4498
Blue aluminum, clear PTFE/red rubber septa	100/pk	5181-1215
Green aluminum, clear PTFE/red rubber septa	100/pk	5181-1216
Red aluminum, clear PTFE/red rubber septa	100/pk	5181-1217
Snap Caps with 11 mm Septa		
Clear polyethylene, clear PTFE/red silicone rubber septa	100/pk	5182-0550
Blue polyethylene, clear PTFE/red rubber septa	100/pk	5182-3458
Green polyethylene, clear PTFE/red rubber septa	100/pk	5182-3457
Red polyethylene, clear PTFE/red rubber septa	100/pk	5182-3459

Screw caps

Crimp caps

Vial Kits

Description	Part No.
2 mL crimp top vial kit Includes 100 vials, 100 crimp caps, 11 mm crimper	01078-68705
2 mL crimp top vial kit Includes clear crimp top vials, silver aluminum crimp caps, PTFE/red rubber septa in 6 drawer storage box	5181-3400
2 mL amber crimp top vial kit Includes amber crimp top vials with write-on spot, silver aluminum crimp caps, PTFE/red rubber septa in 6 drawer storage box	5181-8801

Electronic Crimpers and Decappers

Electronic crimper

Whenever large amounts of crimp vials need to be crimped or decapped, the electronic crimper or decapper is the right tool. It reduces stress and repetitive motion injury associated with manual plier-style crimpers and decappers. Agilent's newly-designed crimper offers easy, hand-held pushbutton operation and provides the following advantages:

- Stronger and sturdier crimping and decapping
- Shorter recharging time and a larger number of battery charges
- Better clearance and more flexibility thanks to improved crimp jaws
- Individual test certificates

Electronic Crimpers and Decappers

Description	Part No.
11 mm Electronic Crimper with 4.8v rechargeable battery pack	5062-0207
20 mm Electronic Crimper with 4.8v rechargeable battery pack and charger	5062-0208
11 mm Electronic Decapper with 4.8v rechargeable battery pack and charger	5062-0209
20 mm Electronic Decapper with 4.8v rechargeable battery pack and charger	5062-0210
4.8v nickel metal hydride replacement battery	5188-6565

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Intelligent Services is now available for 1100/1200 Series LC Systems and Single Quad LC/MS Systems, with more offerings coming soon. For more information, visit www.agilent.com/chem/intelligentservices

1100/1200 Series LC System Recommended Maintenance Schedule

Pumps

Item	Typical Schedule	Actions/Comments
PTFE frits in purge valve	Every month	Before re-installation of the purge valve, always check the gold seal and replace if deformed.
Solvent inlet filter	Every 6 months	Never use the system without a filter installed.
Piston seals, outlet gold seal, plastic cap, wash seal, gasket wash seal	Every 12 months	When piston seals are exchanged, check the surface of the piston for scratches and deposits. Never re-install a used piston seal.
Piston, cartridge active inlet valve, outlet ball valve	Every 24 months	Pistons can be cleaned with alcohol or toothpaste. After exchanging the active inlet valve cartridge, pump several mL until the system is stable.

Autosampler

Item	Typical Schedule	Actions/Comments
Guard column	Every 100-500 injections	Change the guard after 25-50 injections for dirty samples, 100-250 injections for most samples, and 500 injections for very clean samples.
Piston seal, isolation seal, stator face	Every 24 months	

Column

Item	Typical Schedule	Actions/Comments
Needle and needle seat, rotor seal	Every 12 months	Make sure you use rotor seals of the correct material depending on the operating pH.
Column inlet fittings	Ever 5-10 column changes	PEEK fittings make changing inlet fittings fast and easy. Stainless steel fittings are reliable and can be used at higher pressure.

Detectors

Item	Typical Schedule	Actions/Comments
DAD and MWD Detectors	Exchange standard lamps after 1000 hours. Exchange longlife lamps after 2000 hours.	A noisy baseline may indicate it is time to change the lamp. Low light intensity can be caused by a dirty flow cell.
VWD Detectors	Exchange lamp after 1000 hours	Low light intensity can be caused by a dirty flow cell.
Flow cell	Check cleanliness every 6 months	Low light intensity can be caused by a dirty flow cell.

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- Contact your local Agilent Authorized Distributor
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Printed in the USA October 15, 2007
5989-7477EN

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